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(54) **Methods of testing for bronchial asthma or chronic obstructive pulmonary disease**

(57) An objective of the present invention is to provide a method of testing for bronchial asthma or chronic obstructive pulmonary disease, a method of screening for candidate compounds for treating bronchial asthma or chronic obstructive pulmonary disease, and a pharmaceutical agent for treating bronchial asthma or chronic obstructive pulmonary disease.

The present invention identified genes whose expression levels varied between respiratory epithelial cells that had been stimulated by IL-13 to induce the goblet cell differentiation, and unstimulated respiratory

epithelial cells. The respiratory epithelial cells were cultured according to the air interface method. The genes were revealed to be useful as markers for testing for bronchial asthma or chronic obstructive pulmonary disease and screening for therapeutic agents for such diseases. Specifically, the present invention provides methods of testing for bronchial asthma or chronic obstructive pulmonary disease and methods of screening for compounds to treat the diseases based on the comparison of the expression levels of marker genes identified as described above.

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**Description**FIELD OF THE INVENTION

5 **[0001]** The present invention relates to methods of testing for bronchial asthma or chronic obstructive pulmonary disease (COPD).

BACKGROUND OF THE INVENTION

10 **[0002]** Currently, there are more than one hundred million bronchial asthma patients in the world. The rapid increase in the number of asthma patients is a social problem in Japan as well. In advanced countries, the number has increased by 20-50% in the past decade. Thus, asthma is thought to be one of the diseases that would pose a major health threat in the 21st century.

15 **[0003]** Pharmaceuticals used today for treating asthma and candidate pharmaceuticals for that purpose, include: inhaled steroids and oral steroids; agents that suppress the release of inflammatory mediators; anti-allergy agents such as histamine H1 antagonists;  $\beta$ 2 agonists that act as bronchodilators; and immunosuppressive agents. According to a report describing clinical cases in New Zealand, the widespread use of inhaled steroids and  $\beta$ 2 agonists has decreased the mortality rate of patients by 30% compared to 10 years ago. However, both inhaled steroids and  $\beta$ 2 agonists have been reported to have side effects. The side effects of inhaled steroids include oral and esophageal candidiasis, olfactory disorders, adrenal suppression, osteoporosis, cataract, glaucoma, skin thinning, and growth inhibition in children. Side effects of  $\beta$ 2 agonists include ischemic diseases, hyperthyroidism, and diabetes mellitus. In addition, regular use of  $\beta$ 2 agonists has been known to reduce the efficacy of these drugs.

20 **[0004]** Bronchial asthma is characterized by respiratory inflammation and airflow obstruction resulting from various degrees of respiratory stenosis. Representative symptoms include paroxysmal cough and difficulty in breathing. The degree of airflow obstruction in bronchial asthma ranges from relatively mild to life-threatening obstructions. Furthermore, it has been reported that allergic reactions in the mucous membrane of the respiratory tract and bronchial smooth muscles are closely involved in bronchial asthma development.

25 **[0005]** Specifically, an atopic disposition accompanied by hyperproduction of IgE antibodies is seen in many bronchial asthma patients. Many causes are thought to lead to bronchial asthma, but there is no doubt that an atopic disposition is one cause of hypersensitivity in many patients. It is predicted that contraction of bronchial smooth muscles, edema of the respiratory tract mucous membrane, or respiratory tract hypersecretion is involved in the mechanism of respiratory obstruction in an asthma attack. Type-I allergic reactions in the respiratory tract due to exposure to pathogenic allergens play an important role in such changes in the respiratory tract.

30 **[0006]** In bronchial asthma patients, the activity of Th2 helper T cells is enhanced, and so is the production of Th2 cytokines such as interleukin-3 (hereinafter abbreviated as "IL-3"; similarly, interleukin is abbreviated as "IL" ), IL-4, IL-5, IL-13 and granulocyte macrophage colony stimulating factor (GM-CSF), and chemokines such as eotaxin and RANTES. IL-4 and IL-13 have the activity of inducing IgE production, and IL-3 and IL-4 have the activity of inducing the proliferation of mast cells. Eosinophils that differentiate and proliferate by IL-5 and GM-CSF infiltrate into the respiratory tract by the action of eotaxin and RANTES (Allergy Asthma. Proc. 20: 141 (1999)).

35 **[0007]** Eosinophils that infiltrate into the respiratory tract release intracellular granule proteins such as activated major basic protein (MBP) and eosinophil cationic protein (ECP) as a result of degranulation (Compr. Ther. 20: 651 (1994)). These granule proteins exhibit cytotoxic activity, and thus, ablate and damage epithelial cells. The ablation of epithelial cells results in the exposure of sensory nerve endings, enhances the permeability of the epithelium, and causes the loss of the epithelium-derived smooth muscle relaxing factor. Furthermore, eosinophils are known to secrete leukotriene C4 (LTC4) and Platelet activation factor (PAF), which have the activity of enhancing bronchial smooth muscle constriction, and platelet activating factor (PAF). It has been suggested that these reactions are repeated in the body and become chronic resulting in bronchial wall thickening and respiratory hypersensitivity.

40 **[0008]** Specifically, several reports have suggested the deep involvement of IL-4 and IL-13 in allergic reactions. For example, it is known that respiratory hypersensitivity disappears in IL-4-knockout mice (Yssel, H. and Groux, H., Int. Arch. Allergy Immunol., 121: 10-18, 2000). In a mouse model, IL-13 has been shown to be involved in forming an asthma-like pathology regardless of IgE production and the Th2 type (Wills-Karp, M. et al., Science, 282: 2258-2261, 1998; Grunig, G. et al., Science, 282: 2261-2263, 1998; Zhu, Z. et al., J. Clin. Invest., 103: 779-788, 1999). In addition, IL-4 receptors and IL-13 receptors are highly expressed in human respiratory epithelial cells and bronchial smooth muscles (Heinzmann, A. et al., Hum. Mol. Genet., 9: 549-559, 2000). Accordingly, these tissues are thought to be the targets of IL-4 and IL-13. On the other hand, SNPs present in IL-4 receptor  $\alpha$  and IL-13 have been shown to be one of the genetic causes of allergic diseases (Mitsuyasu, H. et al., Nature Genet., 19: 119-120, 1998; Mitsuyasu, H. et al., J. Immunol., 162: 1227-1231, 1999; Kruse, S. et al., Immunol., 96: 365-371, 1999; Heinzmann, A. et al., Hum. Mol. Genet., 9: 549-559, 2000).

**[0009]** Furthermore, IL-4 and IL-13 have been reported to suppress the expression of the  $\beta$  and  $\gamma$  subunits of amiloride-sensitive epithelial sodium channel (ENaC) and increase the expression of cystic fibrosis transmembrane conductance regulator (CFTR) in tracheal epithelial cells. This suppresses  $\text{Na}^+$  release and enhances  $\text{Cl}^-$  secretion. As a result, water secretion is assumed to increase in the bronchial lumen (Galletta L. J. V. et al., J. Immunol. 168: 839-45 (2002)). Therapeutic agents that target the signaling molecules of IL-4 or IL-13, such as IL-4 agonists, soluble IL-4 receptor  $\alpha$  (Borish L. C. et al., Am. J. Respir. Crit. Care Med. 160: 912-22 (1999)), soluble IL-13 receptor  $\alpha_2$ , anti-IL-13 antibodies, and anti-IL-4 antibodies, have already been clinically applied and are expected to be effective in treating bronchial asthma.

**[0010]** Inflammation in the respiratory tract is known to elevate the expression levels of cytokines and adhesion molecules. Genes encoding such cytokines and adhesion molecules, which participate in the onset of allergic diseases such as bronchial asthma, can be targets in drug discovery. Specifically, patients can be diagnosed for the onset of symptoms, seriousness, response to medical treatments, or such, by detecting variations in the expression levels of these genes. Furthermore, patients can be treated using a substance that controls the expression level of such genes or regulates protein activity.

**[0011]** There are several commercially available expectorants for removing sputum, the cause of death by suffocation in asthma. However, until recently, available expectorant types were restricted to those that contain an active SH group, and those that hydrolyze or lubricate the mucus. However, "fudosteine" (a low-molecular-weight oral drug), which was jointly developed by two Japanese pharmaceutical companies, SS Pharmaceutical Co. Ltd., and Mitsubishi Pharma Corporation, and released last December, is a pharmaceutical agent having an activity to suppress goblet cell hyperplasia.

**[0012]** In addition, Genaera Corporation in the United States has reported that the hCLCA1 gene is closely associated with the production of IL-9 and mucus in the mucosal epithelia in asthma patients (J. Allergy Clin. Immunol. 109: 246-50 (2002)); the hCLCA1 gene is the human counterpart of Gob-5 reported by Takeda Chemical Industries LTD., Japan (Proc. Natl. Acad. Sci. USA 98: 5175-80 (2001)). Furthermore, clinical trials have already been launched for the low-molecular-weight oral drug "LOMUCIN" that inhibits the function of this gene.

**[0013]** In the bronchia of asthma patients, the aggravation of the disease state induces differentiation of respiratory epithelial cells into goblet cells and proliferation of these cells. Goblet cells produce a huge glycoprotein called mucin. This protein contributes to the production of sputum, which causes breathing difficulties and is a leading cause of death in chronic bronchial asthma. The increase in the number of goblet cells, which are secretory cells, enhances secretions in the respiratory tract. Thus, such secreted material enhances the obstruction of the respiratory tract and largely contributes to the worsening of asthma symptoms. However, the mechanism underlying goblet cell differentiation in the respiratory epithelium is still unknown.

**[0014]** The term "chronic obstructive pulmonary disease" refers to mainly pulmonary emphysema and chronic bronchitis. Shortness of breath is a main symptom of pulmonary emphysema; cough and sputum are main symptoms of chronic bronchitis. These are the major subjective symptoms of respiratory diseases in aged patients. In addition to aging, smoking is deeply involved in the onset of chronic obstructive pulmonary diseases. In pulmonary emphysema, the walls of pulmonary alveoli at the end of bronchioles are damaged and greatly swollen; the elasticity and contractility of the walls are impaired, and thus, the lungs have difficulty contracting during exhalation. This often causes shortness of breath. In addition, bronchial disorders result in bronchial obstruction, which is caused by swollen mucous membranes, sputum, and such. In chronic bronchitis, chronic inflammation and edema in the bronchia induce differentiation of bronchial epithelial cells into goblet cells, which results in the overproduction of secretory material. This results in coughs that produce sputum. In chronic obstructive pulmonary diseases, narrowed bronchia and damaged lungs cannot be restored to the original state. Furthermore, there are about 220,000 and 1,400,00 patients with chronic obstructive pulmonary diseases in Japan and the United States, respectively, and the diseases are the fourth leading cause of death in both countries. Thus, chronic obstructive pulmonary diseases are quite serious.

**[0015]** There is a report suggesting the correlation between chronic obstructive pulmonary diseases and IL-13 (Zheng T. et al, J Clin. Invest.; 106, 1081-1093, 2000). According to this report, transgenic mice in which respiratory epithelial cells were allowed to express IL-13, developed pulmonary emphysema, inflammation, and goblet cell hyperplasia.

## SUMMARY OF THE INVENTION

**[0016]** As described above, in bronchial asthma or chronic obstructive pulmonary diseases, changes in respiratory epithelial cells are crucial factors constituting the disease states. One of the morbid changes of respiratory epithelial cells is the differentiation into goblet cells. An objective of the present invention is to identify genes associated with the differentiation into goblet cells. Another objective of the present invention is to provide diagnostic markers for bronchial asthma and drug discovery targets.

**[0017]** Drugs suppressing the differentiation into goblet cells in respiratory epithelial tissues were developed only recently. This is a new approach in drug discovery. Once the mechanism underlying the differentiation into goblet cells

is elucidated, it may be possible to establish a basic treatment for bronchial asthma. Furthermore, agents that affect the process of goblet cell differentiation are predicted to be useful in the treatment of diseases involving inflammation and overproduction of mucus, such as chronic obstructive pulmonary diseases, cystic fibrosis, chronic sinusitis, bronchiectasis, diffuse panbronchiolitis, as well as asthma.

**[0018]** A culture method (called the "air interface (AI) method") for differentiating human respiratory epithelial cells into goblet cells in the presence of IL-13 has been established by researchers of the Department of Geriatric and Respiratory Medicine, Tohoku University School of Medicine, Japan, who are collaborators in the present invention. Using this method, the present inventors predicted that goblet cell differentiation-associated genes can be identified by elucidating which gene expression varies in respiratory epithelial cells when stimulated by IL-13.

**[0019]** Conventionally, bronchial epithelial cells played a vital role in studies concerning the transport of water and electrolytes in humans and other animals. Moreover, particularly in humans, these cells have been significant in clarifying disease states of respiratory tract infections in cystic fibrosis and in establishing therapeutic methods. Over the past two decades, methods for culturing (*in vitro*) respiratory epithelial cells obtained from protease-treated trachea tissues have been improved by improving culture media and using growth-promoting substances. In addition, the AI method has been established, in which cilia and secretory granules can be produced *in vitro* by culturing cells under conditions similar to the environment around respiratory epithelial cells *in vivo*. In the AI method, the culture medium facing the mucous membrane side (apical side) of the cells is removed exposing cells to air while water and nutrients are supplied from the chorionic membrane side (basolateral side) (Van Scott MR., Exp Lung Res, 11: 75-94, 1986, Widdicombe JH., Am J Physiol, 258:L13-L18, 1990, Kim KC, J Biol Chem, 260: 4021-4027, 1985, Adler KB, Am J Respir Cell Mol Biol, 2:145-154, 1990).

**[0020]** Human bronchial epithelial cells cultured in the presence of human IL-13 using the air interface method were reported to express TGF- $\alpha$  (Booth BW, Adler KB, Bonner JC, Tournier F, Martin LD. Interleukin-13 induces proliferation of human airway epithelial cells *in vitro* via a mechanism mediated by transforming growth factor- $\alpha$ . Am J Respir Cell Mol Biol. 2001 Dec; 25(6): 739-743). In addition, the ion transport ability of human bronchial epithelial cells has been evaluated in a previous report, in which cells were cultured by the air interface method in the presence of IL-13 (Danahay H, Am J Physiol Lung Cell Mol Physiol, 282:L226-L236, 2002). However, these reports make no reference to goblet cell differentiation, and have not conducted any exhaustive gene expression analyses.

**[0021]** Furthermore, bronchial epithelial cells of guinea pigs has been reported to differentiate into goblet cells when cultured in the presence of human IL-13 for 14 days using the air-liquid interface method (Kondo, M., Tamaoki, J., Takeyama, K., Nakata, J. and Nagai, A. Interleukin-13 induces goblet cell differentiation in a primary cell culture from Guinea pig tracheal epithelium. Am J Respir Cell Mol Biol 27,536-541, 2002). However, there are no reports on exhaustive analyses of genes expressed in human bronchial epithelial cells cultured by the method described above.

**[0022]** On the other hand, the present applicants have identified eight types of allergy-associated genes whose expression levels decrease upon IL-4 or IL-13 stimulation in several lots of primary human respiratory epithelial cell cultures (Unexamined Published Japanese Patent Application No. (JP-A) 2002-191398). The applicants have also identified six types of allergy-associated genes whose expression levels greatly increase in several lots under the same conditions as described above (WO 02/052006 A1). The gene expression analyses in these two previous patent applications were carried out using a conventional culture method which induces no goblet cell differentiation.

**[0023]** Using oligonucleotide microarrays (GeneChip®, Affymetrix, Inc.) and air interface method, the present inventors compared the expression profiles of genes expressed in respiratory epithelial cells stimulated with IL-13 for goblet cell differentiation, with those of cells not stimulated with IL-13. The inventors selected genes whose expression levels increased by two folds or more or decreased by half or more of the initial levels as a result of the differentiation, and determined the expression levels of the genes. Then, the inventors confirmed the variation of the expression level of marker genes selected from the group described below in (a) or (b).

**[0024]** Furthermore, with respect to the mouse homologs of the human genes selected by the method described above, the inventors detected variations in the expression levels in respiratory hypersensitivity model mice. As a result, the variation pattern of expression levels of the mouse homologs coincided well with that of human genes.

**[0025]** The nucleotide sequences of the respective marker genes listed in (a) and (b) are known. The functions of the proteins encoded by each marker gene are described in the references listed in the "References" section in Tables 3-19 (increased) and Tables 20-36 (decreased) below. The nucleotide sequences of the mouse homologs of the marker genes of the present invention are also known. The functions of the proteins encoded by the mouse homologues of the respective marker genes are described in the references listed in the "References" section in Tables 40-62 (increased) and Tables 63-83 (decreased) below.

**[0026]** Among these groups of genes, some genes have been reported to be directly related to bronchial asthma. However, most of the genes have not been shown to be associated with an allergic disease. Furthermore, even for genes that are reported to be associated with bronchial asthma, there are no reports that focus on the aspect of combinations with other co-expressing genes whose expression levels vary at the same timing that the asthma-related genes do.



[0027] A close relationship between bronchial asthma symptoms and the marker genes of the present invention is suggested by the finding that the expression levels of marker genes vary in the differentiation process of respiratory epithelial cells into goblet cells. The relationship between the allergic response of the respiratory epithelium and the marker genes of the present invention was verified by the fact that the variation pattern of the expression levels of mouse homologs in the respiratory hypersensitivity mouse model is consistent with that in humans. Based on the findings described above, the present inventors revealed that tests for bronchial asthma or chronic obstructive pulmonary disease and screenings for therapeutic agents can be achieved by using as a marker the expression level of each marker gene or the activity of the protein encoded by each marker gene.

[0028] Specifically, the present invention relates to the following methods of testing for bronchial asthma or chronic obstructive pulmonary disease and the following methods of screening for candidate compounds for treating bronchial asthma or chronic obstructive pulmonary disease:

[1] a method of testing for bronchial asthma or chronic obstructive pulmonary disease, which comprises the steps of:

- (1) determining the expression level of a marker gene in a biological sample from a subject;
- (2) comparing the expression level determined in step (1) with the expression level of the marker gene in a biological sample from a healthy subject; and
- (3) judging the subject to have bronchial asthma or chronic obstructive pulmonary disease when the result of the comparison in step (2) indicates that (i) the expression level of the marker gene in the subject is higher than that in the control when the marker gene is a gene according to (a) or (ii) the expression level of the marker gene in the subject is lower than that in the control when said marker gene is a gene according to (b);

wherein the marker gene is any one selected from the group according to (a) or (b) :

- (a) a group of genes whose expression levels increase when respiratory epithelial cells are stimulated with interleukin-13, and comprise any one of the nucleotide sequences of SEQ ID NOs: 25 to 310;
- (b) a group of genes whose expression levels decrease when respiratory epithelial cells are stimulated with interleukin-13 and comprise any one of the nucleotide sequences of SEQ ID NOs: 311 to 547;

[2] the testing method according to [1], wherein the biological sample is a respiratory epithelial cell;

[3] the testing method according to [1], wherein the gene expression level is measured by PCR analysis of the cDNA;

[4] the testing method according to [1], wherein the gene expression level is measured by detecting the protein encoded by the marker gene;

[5] a reagent for testing for bronchial asthma or chronic obstructive pulmonary disease, wherein the reagent comprises a polynucleotide comprising the nucleotide sequence of a marker gene, or an oligonucleotide having at least 15 nucleotides and comprising a nucleotide sequence complementary to the complementary strand of the nucleotide sequence of the marker gene, and wherein, the marker gene is any one selected from the group according to (a) or (b) in [1];

[6] a reagent for testing for bronchial asthma or chronic obstructive pulmonary disease, wherein the reagent comprises an antibody that recognizes a protein encoded by a marker gene, and wherein the marker gene is any one selected from the group according to (a) or (b) in [1];

[7] a method of screening for a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease, wherein the marker gene is any one selected from the group according to (a) or (b) in [1], and wherein the method comprises the steps of:

- (1) contacting a candidate compound with a cell expressing the marker gene;
- (2) measuring the expression level of said gene; and
- (3) selecting a compound that decreases the expression level of a marker gene belonging to group (a) or increases the expression level of a marker gene belonging to group (b), as compared to that in a control with which the compound has not been contacted;

[8] the method according to [7], wherein the cell is a respiratory epithelial cell or a goblet cell;

[9] the method according to [8], which comprises the step of culturing the respiratory epithelial cells under conditions in which culture medium is removed from the apical side of said cells and the culture medium is supplied from the basolateral side of the cells;

[10] a kit for screening for a candidate compound for a therapeutic agent to treat bronchial asthma or chronic obstructive pulmonary disease, wherein the kit comprises (i) a polynucleotide comprising the nucleotide sequence

of a marker gene, or an oligonucleotide having at least 15 nucleotides and comprising a nucleotide sequence that is complementary to the complementary strand of the polynucleotide, and (ii) a cell expressing the marker gene, and wherein the marker gene is any one selected from the group according to (a) or (b) in [1];

[11] a kit for screening for a candidate compound for a therapeutic agent to treat bronchial asthma or chronic obstructive pulmonary disease, wherein the kit comprises (i) an antibody that recognizes a protein encoded by a marker gene, and (ii) a cell expressing the marker gene, wherein the marker gene is selected from the group according to (a) or (b) in [1];

[12] the kit according to [10] or [11], which further comprises a cell-supporting material to culture respiratory epithelial cells under conditions in which the culture medium is supplied from the basolateral side of the cells;

[13] the kit according to [12], which further comprises respiratory epithelial cells;

[14] an animal model for bronchial asthma or chronic obstructive pulmonary disease, wherein the animal is a transgenic nonhuman vertebrate wherein the expression level of a marker gene, or a gene functionally equivalent to the marker gene, has been increased in the respiratory tissue, wherein the marker gene is any one selected from the group according to (a) in [1] or the following (A):

(A) a group of genes whose expression levels increase in the lung of an animal model for bronchial hypersensitivity induced by an exposure to the ovalbumin antigen, wherein the genes comprise any one of the nucleotide sequences of SEQ ID NOs: 954 to 1174;

[15] the animal model according to [14], wherein the nonhuman vertebrate is a mouse;

[16] an animal model for bronchial asthma or chronic obstructive pulmonary disease, wherein the animal is a transgenic nonhuman vertebrate wherein the expression level of a marker gene, or a gene functionally equivalent to the marker gene, has been decreased in the respiratory tissue, wherein the marker gene is any one selected from the group according to (b) in [1] or the following (B):

(B) a group of genes whose expression levels decrease in the lung of an animal model for bronchial hypersensitivity induced by an exposure to the ovalbumin antigen, wherein the genes comprise any one of the nucleotide sequences of SEQ ID NOs: 1376 to 1515;

[17] the animal model according to [16], wherein the nonhuman vertebrate is a mouse;

[18] a method for producing an animal model for bronchial asthma or chronic obstructive pulmonary disease, which comprises the step of administering to a mouse any one of (i) to (iv):

(i) a polynucleotide comprising the nucleotide sequence constituting any one of the genes selected from the gene group according to (A) in [14];

(ii) a protein encoded by a polynucleotide comprising the nucleotide sequence constituting any one of the genes selected from the gene group according to (A) in [14];

(iii) an antisense nucleic acid of a polynucleotide comprising the nucleotide sequence constituting any one of the genes selected from the gene group according to (B) in [16], a ribozyme, or a polynucleotide that suppresses the expression of a gene through an RNAi (RNA interference) effect; and,

(iv) an antibody that binds to a protein encoded by a polynucleotide comprising the nucleotide sequence constituting any one of the genes selected from the gene group according to (B) in [16], or a fragment comprising an antigen-binding region thereof;

[19] an inducer that induces bronchial asthma in a mouse, wherein said inducer comprises as an active ingredient any one of (i) to (iv) in [18];

[20] a method of screening for a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease comprising the steps of:

(1) administering a candidate compound to an animal subject,

(2) assaying the expression level of the marker gene in a biological sample obtained from the animal subject, and

(3) selecting a compound that decreases the expression level of a marker gene belonging to group (a) or (A), or a compound that increases the expression level of a marker gene belonging to group (b) or (B), as compared to that in a control with which the candidate compound has not been contacted,

wherein the marker gene is any one selected from the group consisting of (a) or (b) in [1], (A) in [14], and (B) in [16], or a gene functionally equivalent to said marker gene;

[21] a method of screening for a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease comprising the steps of:

- (1) contacting a candidate compound with a cell into which a vector has been introduced, wherein the vector comprises a transcriptional regulatory region of a marker gene and a reporter gene that is expressed under the control of the transcriptional regulatory region,
- (2) measuring the activity of the reporter gene, and
- (3) selecting a compound that decreases the expression level of the reporter gene when the marker gene belongs to group (a), or a compound that increases the expression level of the reporter gene when the marker gene belongs to group (b), as compared to that in a control with which the candidate compound has not been contacted,

wherein the marker gene is any one selected from the group according to (a) or (b) in [1], or a gene functionally equivalent to the marker gene;

[22] a method of screening for a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease comprising the steps of:

- (1) contacting a candidate compound with a protein encoded by a marker gene,
- (2) measuring the activity of the protein, and
- (3) selecting a compound that decreases the activity when the marker gene belongs to group (a), or a compound that increases the activity when the marker gene belongs to the group (b), as compared to that in a control where the candidate compound has not been contacted,

wherein the marker gene is any one selected from the group according to (a) or (b) in [1], or a gene functionally equivalent to the marker gene;

[23] a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease, which comprises as an active ingredient a compound obtainable by any one of the screening methods according to [7], [20], [21], and [22];

[24] a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease, which comprises as an active ingredient a marker gene or an antisense nucleic acid corresponding to a portion of the marker gene, a ribozyme, or a polynucleotide that suppresses the expression of the gene through an RNAi effect, wherein the marker gene is any one selected from the group according to (a) in [1];

[25] a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease, which comprises as an active ingredient an antibody recognizing a protein encoded by a marker gene, wherein the marker gene is any one selected from the group according to (a) in [1];

[26] a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease, which comprises as an active ingredient a marker gene, or a protein encoded by a marker gene, wherein the marker gene is any one selected from the group according to (b) in [1]; and

[27] a DNA chip for testing for bronchial asthma or a chronic obstructive pulmonary disease, on which a probe has been immobilized to assay a marker gene, and wherein the marker gene comprises at least a single type of gene selected from group (a) and (b) in [1].

**[0029]** The present invention also relates to a method for treating bronchial asthma or a chronic obstructive pulmonary disease, which comprises the step of administering a compound obtainable by any one of the screening methods according to [7], [20], [21], and [22]. The present invention further relates to the use of a compound obtainable by any one of the screening methods according to [7], [20], [21], and [22] in producing pharmaceutical compositions to treat bronchial asthma or chronic obstructive pulmonary diseases.

**[0030]** In addition, the present invention relates to a method for treating bronchial asthma or chronic obstructive pulmonary disease, wherein the method comprises administering (i) or (ii) described below. Alternatively, the present invention relates to the use of (i) or (ii) described below, in producing pharmaceutical compositions for treating bronchial asthma or chronic obstructive pulmonary disease:

- (i) a gene according to (a) described above or an antisense nucleic acid corresponding to a portion of the gene, a ribozyme, or a polynucleotide that suppresses the expression of the gene through an RNAi effect; and
- (ii) an antibody recognizing a protein encoded by a gene according to (a) described above.

Furthermore, the present invention relates to a method for treating bronchial asthma or a chronic obstructive pulmonary disease, which comprises administering (iii) or (iv) described below. Alternatively, the present invention relates to the use of (iii) or (iv) described below, in producing pharmaceutical compositions to treat bronchial asthma or chronic obstructive pulmonary diseases:

- (iii) a gene according to (b) described above; and
- (iv) a protein encoded by a gene according to (b) described above.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0031]

Fig. 1 is a schematic diagram of the air interface (AI) method.

Fig. 2 is a schematic diagram showing the differences in the culture procedure between the air interface (AI) method and the immersed feeding (IMM) method.

Fig. 3 is a graph showing variations in the expression level of the pendrin gene during goblet cell differentiation when cultured by the AI method or the IMM method. The expression level (copy number/ng RNA) is indicated in the vertical axis, and the culture conditions and duration (in days) are indicated in the horizontal axis.

Fig. 4 is a graph showing the expression levels of the pendrin (PDS) gene in the lung of the mouse asthma model. The expression level (copy number/ng RNA) is indicated in the vertical axis, and the conditions used to treat mice and the number of individuals in each treated group are indicated in the horizontal axis.

naive: untreated group; S-sal: OVA antigen-sensitized, physiological saline-inhaled group; S-OVA: OVA antigen-sensitized, OVA antigen-inhaled group; Pred: OVA antigen-sensitized, OVA antigen-inhaled, Prednisolone-treated group

Fig. 5 shows micrographs (x 400) to determine the localization of the PDS mRNA in the lung tissues of the mouse asthma model using in situ hybridization.

Fig. 6 shows micrographs (x 400) of the lung tissues of the mouse asthma model. The tissues were subjected to hematoxylin-eosin (HE) staining, periodic acid-Schiff (PAS) staining, or Alcian Blue staining.

Figs 7-31 show the results of quantitative PCR assay analyses of genes whose expression levels varied in both humans and mice. The assays were carried out with ABI 7700 using cDNA of differentiated human goblet cells (human goblet cell differentiation model) or cDNA of the mouse OVA antigen-exposed bronchial hypersensitivity model. The vertical axis indicates the copy number of mRNA (copy number/ng total RNA). In the left panel, the horizontal axis indicates the culture conditions (AI method or IMM method) and duration (in days). In the right panel, the horizontal axis indicates the conditions used to treat mice and the number of antigen inhalation before collecting lung tissues.

naive: untreated group; S-sal: OVA antigen-sensitized, physiological saline-inhaled group;

S-OVA: OVA antigen-sensitized, OVA antigen-inhaled group; Pred: OVA antigen-sensitized, OVA antigen-inhaled, Prednisolone-treated group

Fig. 7 shows the assay result for the gene SCYB11. Likewise, the following Figures show the assay results for the respective genes. The symbols for the genes shown in the respective Figures are listed below.

Fig. 8: FBP1

Fig. 9: IL1RL1

Fig. 10: ALOX15

Fig. 11: ADAM8

Fig. 12: diubiquitin

Fig. 13: EPHX1

Fig. 14: RDC1

Fig. 15: IGFBP3

Fig. 16: IGFBP6

Fig. 17: S100A8

Fig. 18: CNTN1

Fig. 19: cig5

Fig. 20: SECTM1

Fig. 21: CP

Fig. 22: HEY1

Fig. 23: MGC14597

Fig. 24: UCP2

Fig. 25: STEAP

Fig. 26: LOC51297

Fig. 27: SLC34A2

Fig. 28: AQP5

Fig. 29: SLC26A4

Fig. 30: SCNN1B

Fig. 31: IL-13Ra2

Figs 32-69 show the results of quantitative PCR assays for genes whose expression levels varied in humans. The assays were carried out with ABI 7700 using cDNA of differentiated human goblet cells (human goblet cell differentiation model) or cDNA of the mouse OVA antigen-exposed bronchial hypersensitivity model. The vertical axis indicates the copy number of mRNA (copy number/ng total RNA). In the left panel, the horizontal axis indicates the culture conditions (the AI method or the IMM method) and duration (in days). In the right panel, the horizontal axis indicates the conditions used to treat mice and the number of antigen inhalation before collecting lung tissues.

naive: untreated group; S-sal: OVA antigen-sensitized, physiological saline-inhaled group;

S-OVA: OVA antigen-sensitized, OVA antigen-inhaled group; Pred: OVA antigen-sensitized, OVA antigen-inhaled, Prednisolone-treated group

Figs 32-69 (varies in human)

Fig. 32 shows the assay result for the gene NOS2A. Likewise, the following figures show the assay results for the respective genes. The symbols for the genes shown in the respective figures are listed below.

Fig. 33: ISG15 (only the result for the cDNA of human goblet cell differentiation model)

Fig. 34: CH25H (only the result for the cDNA of human goblet cell differentiation model)

Fig. 35: SERPINB4

Fig. 36: SERPINB2

Fig. 37: NCF2

Fig. 38: NOTCH3 (only the result for the cDNA of human goblet cell differentiation model)

Fig. 39: MDA5

Fig. 40: GBF5

Fig. 41: PRO1489 (only the result for the cDNA of human goblet cell differentiation model)

Fig. 42: MGC13102

Fig. 43: TGFB2

Fig. 44: DNAJA1

Fig. 45: SIAT1

Fig. 46: CISH

Fig. 47: AGR2 (only the result for the cDNA of human goblet cell differentiation model)

Fig. 48: MSMB (only the result for the cDNA of human goblet cell differentiation model)

Fig. 49: FLJ23516

Fig. 50: KCNMA1

Fig. 51: FLJ10298

Fig. 52: THBS1

Fig. 53: ABCC5

Fig. 54: SLC21A12 (only the result for the cDNA of human goblet cell differentiation model)

Fig. 55: SLC17A5 (only the result for the cDNA of human goblet cell differentiation model)

Fig. 56: connexin43

Fig. 57: BST2 (only the result for the cDNA of human goblet cell differentiation model)

Fig. 58: IFI9-27

Fig. 59: ICAM1

Fig. 60: periostin

Fig. 61: CDH-6

Fig. 62: DD96

Fig. 63: CTSC

Fig. 64: BENE (only the result for the cDNA of human goblet cell differentiation model)

Fig. 65: FLJ10261

Fig. 66: OAS2 (only the result for the cDNA of human goblet cell differentiation model)

Fig. 67: Odz2

Fig. 68: E48

Fig. 69: KRT16

#### DETAILED DESCRIPTION OF THE INVENTION

**[0032]** In the present invention, the term "allergic disease" is a general term used for a disease in which an allergic reaction is involved. More specifically, for a disease to be considered allergic, the allergen must be identified, a strong correlation between exposure to the allergen and the onset of a pathological change must be demonstrated, and it should have been proven that an immunological mechanism is behind the pathological change. Herein, the term "immunological mechanism" means that leukocytes show an immune response to allergen stimulation. Examples of al-

lergens are dust mite antigens, pollen antigens, etc.

**[0033]** Representative allergic diseases are bronchial asthma, allergic rhinitis, pollinosis, insect allergy, etc. Allergic diathesis is a genetic factor that is inherited from allergic parents to children. Familial allergic diseases are also called atopic diseases, and their causative factor that can be inherited is atopic diathesis.

**[0034]** Bronchial asthma is characterized by respiratory tract inflammation and varying degrees of airflow obstruction, and shows paroxysmal cough, wheezing, and difficulty in breathing. The degree of airflow obstruction ranges from mild to life-threatening obstructions. Such airway obstructions can be reversed at least in part either through natural healing or by treatment. Various types of cells infiltrating into the respiratory tract, such as eosinophils, T cells (Th2), and mast cells, are involved in the inflammation and the damaging of the mucosal epithelium of the respiratory tract. The reversibility of airway obstruction tends to decrease in adult patients affected by the disease for a long time. In such cases, "remodelings" such as thickening of the basement membrane under the respiratory epithelium is often seen. In sensitive patients, respiratory remodeling accompanies bronchial hypersensitivity.

**[0035]** Herein, a gene that can be used as a marker for bronchial asthma is referred to as "marker gene". A protein comprising an amino acid sequence encoded by a marker gene is referred to as a "marker protein". Unless otherwise stated, the term "marker gene" is used as a terminology that refers to one or more arbitrary gene(s) selected from the genes according to (a) or (b):

(a) a group of genes whose expression levels increase when respiratory epithelial cells are stimulated with interleukin-13, and comprise any one of the nucleotide sequences of SEQ ID NOs: 25 to 310;

(b) a group of genes whose expression levels decrease when a respiratory epithelial cell is stimulated with interleukin-13 and comprise any one of the nucleotide sequences of SEQ ID NOs: 311 to 547;

**[0036]** The nucleotide sequences of the marker genes of the present invention or portions of the genes are known in the art. Some of the amino acid sequences encoded by the nucleotide sequences of the marker genes of the present invention have already been identified. The GenBank accession numbers for obtaining the data of partial nucleotide sequences of the marker genes, together with names of the marker genes, are listed below. In addition, the amino acid sequences of the marker proteins are shown in Tables 84-113.

**[0037]** When a partial nucleotide sequence of a marker gene has been identified, one skilled in the art can determine the full-length nucleotide sequence of the marker gene based on the information of the partial nucleotide sequence. Such a full-length nucleotide sequence can be obtained, for example, through *in-silico* cloning. Specifically, an EST nucleotide sequence constituting a portion of a marker gene (query sequence) is compared with massive amounts of expressed sequence tag (EST) information accumulated in public databases. Based on the comparison result, information of other ESTs that share a nucleotide sequence that coincides with the query sequence over a certain length is selected. The newly selected EST information is used as a new query sequence to gain other EST information, and this is repeated. A set of multiple ESTs sharing a partial nucleotide sequence can thus be obtained by this repetition. A set of ESTs is referred to as a "cluster". The nucleotide sequence of a gene of interest can be identified by assembling the nucleotide sequences of ESTs constituting a cluster into a single nucleotide sequence.

**[0038]** Furthermore, one skilled in the art can design PCR primers based on the nucleotide sequence determined through *in-silico* cloning. The presence of a gene comprising the determined nucleotide sequence can be verified by determining whether a gene fragment whose size is as expected is amplified by RT-PCR using such primers.

**[0039]** Alternatively, the result of *in-silico* cloning can be assessed by Northern blotting. Northern blotting is carried out using a probe designed based on the information of the determined nucleotide sequence. As a result, if a band that agrees with the above nucleotide sequence information is obtained, the presence of a gene comprising the determined nucleotide sequence can be verified.

**[0040]** A gene of interest can be isolated empirically, in addition to *in-silico* cloning. First, a cDNA clone that provided nucleotide sequence information deposited as an EST is obtained. Then, the entire nucleotide sequences of the cDNA in that clone are determined. As a result, it may be possible to determine the full-length sequence of the cDNA. At least it is possible to determine a longer nucleotide sequence. The length of the cDNA in the clone can be pre-determined empirically when the vector structure is known.

**[0041]** Even if the clone that provided nucleotide sequence information of an EST is unavailable, there is a method known in the art by which an unknown part of a nucleotide sequence of a gene can be obtained based on a partial nucleotide sequence of the gene. For example, in some cases, a longer nucleotide sequence can be identified by screening a cDNA library using an EST as a probe. When a cDNA library comprising many full-length cDNA is used in the screening, a full-length cDNA clone can be readily isolated. For example, a cDNA library synthesized by the oligo-capping method is known to contain many full-length cDNA.

**[0042]** Furthermore, there is a technique known in the art to synthesize an unknown portion of a gene, based on the information of a partial nucleotide sequence of the gene. For example, RACE is a representative technique for isolating a gene comprising an unknown nucleotide sequence. In RACE, an oligonucleotide linker is artificially ligated to one

end of a cDNA. The oligonucleotide linker consists of a known nucleotide sequence. Thus, PCR primers can be designed based on the information of a portion whose nucleotide sequence is already known as an EST and the nucleotide sequence of the oligonucleotide linker. The nucleotide sequence of the unknown region can be synthesized specifically by PCR using the primers designed as described above.

**[0043]** The method of testing for allergic diseases of the present invention comprises measuring the expression level of each marker gene in a biological sample from a subject and comparing the level with that of the marker gene in a control biological sample. When the marker gene is one of the genes according to (a) described above and the expression level is higher than that in the control, the subject is judged to be affected with bronchial asthma or a chronic obstructive pulmonary disease. Alternatively, when the marker gene is one of the genes according to (b) described above and the expression level is lower than that in the control, the subject is judged to be affected with bronchial asthma or a chronic obstructive pulmonary disease. In the present invention, a respiratory epithelial cell which has not been stimulated with IL-13, can be used as a control. Preferably, the control respiratory epithelial cell has been cultured by the AI method.

**[0044]** The standard value for the control may be pre-determined by measuring the expression level of the marker gene in the control, in order to compare the expression levels. Typically, for example, the standard value is determined based on the expression level of the above-mentioned marker gene in the control. For example, the permissible range is taken as  $\pm 2S.D.$  based on the standard value. A technique for determining the permissible range and the standard value based on a measured value for the marker gene is known in the art. Once the standard value is determined, the testing method of the present invention may be performed by measuring only the expression level in a biological sample from a subject and comparing the value with the determined standard value for the control.

**[0045]** When the marker gene is one of the genes according to (a) described above and the expression level in a subject is higher than the permissible range in comparison to that in the control, the subject is judged to be affected with bronchial asthma or a chronic obstructive pulmonary disease. Likewise, when the marker gene is one of the genes according to (b) described above and the expression level in a subject is lower than the permissible range in comparison to that in the control, the subject is judged to be affected with bronchial asthma or a chronic obstructive pulmonary disease. When the expression level of the marker gene falls within the permissible range, the subject is unlikely to be affected with bronchial asthma or a chronic obstructive pulmonary disease.

**[0046]** In this invention, expression levels of marker genes include transcription of the marker genes to mRNA, and translation into proteins. Therefore, the method of testing for bronchial asthma or a chronic obstructive pulmonary disease of this invention is performed based on a comparison of the intensity of expression of mRNA corresponding to the marker genes, or the expression level of proteins encoded by the marker genes.

**[0047]** The measurement of the expression levels of marker genes in the testing for bronchial asthma or a chronic obstructive pulmonary disease of this invention can be carried out according to known gene analysis methods. Specifically, one can use, for example, a hybridization technique using nucleic acids that hybridize to these genes as probes, or a gene amplification technique using DNA that hybridize to the marker genes of this invention as primers.

**[0048]** The probes or primers used for the testing of this invention can be designed based on the nucleotide sequences of the marker genes. The nucleotide sequences of the marker genes and a portion of amino acid sequences encoded by the genes are known. The GenBank accession numbers for the known nucleotide sequences of the respective marker genes of the present invention are shown below in Tables 3-19 (genes showing increased expression) and Tables 20-36 (genes showing decreased expression). When a gene has a number beginning with NM in the column of RefSeq in Tables, the full-length nucleotide sequence of the gene is known in the art. When a gene does not have a number beginning with NM in the column of RefSeq, a partial nucleotide sequence can be obtained based on the GenBank Accession number of the gene. As described above, the full-length nucleotide sequence of a gene can be obtained based on the information of a known partial nucleotide sequence. In addition, with respect to some of the marker genes of the present invention, the nucleotide sequences and the amino acid sequences encoded by them are shown in the Tables.

**[0049]** Genes of higher animals generally accompany polymorphism in a high frequency. There are also many molecules that produce isoforms comprising mutually different amino acid sequences during the splicing process. Any gene associated with bronchial asthma or a chronic obstructive pulmonary disease that has an activity similar to that of a marker gene is included in the marker genes of the present invention, even if it has nucleotide sequence differences due to polymorphism or being an isoform.

**[0050]** Herein, the marker genes include homologs of other species in addition to humans. Thus, unless otherwise specified, the expression "marker gene in a species other than human" refers to a homolog of the marker gene unique to the species or a foreign marker gene which has been introduced into an individual.

**[0051]** As used herein, the expression "homolog of a human marker gene" refers to a gene derived from a species other than a human, which can hybridize to the human marker gene as a probe under stringent conditions. Stringent conditions typically mean hybridization in 4x SSC at 65°C followed by washing with 0.1x SSC at 65°C for 1 hour. Temperature conditions for hybridization and washing that greatly influence stringency can be adjusted according to

the melting temperature (T<sub>m</sub>). T<sub>m</sub> varies with the ratio of constitutive nucleotides in the hybridizing base pairs, and the composition of the hybridization solution (concentrations of salts, formamide, and sodium dodecyl sulfate). Therefore, considering these conditions, one skilled in the art can select an appropriate condition to produce an equal stringency experimentally or empirically.

**[0052]** An example of a homolog of the marker genes of the present invention, which is derived from another species, is the mouse homolog. Using the mouse model of bronchial hypersensitivity, the present inventors confirmed that the mouse genes according to (A) or (B) exhibit variation patterns of expression levels similar to that of human marker genes. This finding supports the fact that there is a close relationship between the human marker genes identified in the present invention and the allergic responses of tissues in the respiratory tract. This finding also supports the fact that homologs of various species can be used as marker genes of the present invention.

**[0053]** A polynucleotide comprising the nucleotide sequence of a marker gene or a nucleotide sequence that is complementary to the complementary strand of the nucleotide sequence of a marker gene and has at least 15 nucleotides, can be used as a primer or probe. Herein, the expression "complementary strand" means one strand of a double stranded DNA with respect to the other strand and which is composed of A: T (U for RNA) and G:C base pairs. In addition, "complementary" means not only those that are completely complementary to a region of at least 15 continuous nucleotides, but also those that have a nucleotide sequence homology of at least 70%, preferably at least 80%, more preferably 90%, and even more preferably 95% or higher. The degree of homology between nucleotide sequences can be determined by an algorithm, BLAST, etc.

**[0054]** Such polynucleotides are useful as a probe to detect a marker gene, or as a primer to amplify a marker gene. When used as a primer, the polynucleotide comprises usually 15 bp to 100 bp, preferably 15 bp to 35 bp of nucleotides. When used as a probe, a DNA comprises the whole nucleotide sequence of the marker gene (or the complementary strand thereof), or a partial sequence thereof that has at least 15-bp nucleotides. When used as a primer, the 3' region must be complementary to the marker gene, while the 5' region can be linked to a restriction enzyme-recognition sequence or a tag.

**[0055]** "Polynucleotides" in the present invention may be either DNA or RNA. These polynucleotides may be either synthetic or naturally-occurring. Also, DNA used as a probe for hybridization is usually labeled. Examples of labeling methods are those as described below. Herein, the term "oligonucleotide" means a polynucleotide with a relatively low degree of polymerization. Oligonucleotides are included in polynucleotides. The labeling methods are as follows:

- nick translation labeling using DNA polymerase I;
- end labeling using polynucleotide kinase;
- fill-in end labeling using Klenow fragment (Berger, SL, Kimmel, AR. (1987) Guide to Molecular Cloning Techniques, Method in Enzymology, Academic Press; Hames, BD, Higgins, SJ. (1985) Genes Probes: A Practical Approach. IRL Press; Sambrook, J., Fritsch, EF, Maniatis, T. (1989) Molecular Cloning: a Laboratory Manual, 2nd Edn. Cold Spring Harbor Laboratory Press);
- transcription labeling using RNA polymerase (Melton, DA, Krieg, PA, Rebagliati, MR, Maniatis, T, Zinn, K, Green, MR. (1984) Nucleic Acid Res., 12, 7035-7056); and
- non-isotopic labeling of DNA by incorporating modified nucleotides (Kricka, LJ. (1992) Non-isotopic DNA Probing Techniques. Academic Press).

**[0056]** Tests for bronchial asthma or a chronic obstructive pulmonary disease using hybridization techniques, can be performed using, for example, Northern hybridization, dot blot hybridization, or the DNA microarray technique. Furthermore, gene amplification techniques, such as the RT-PCR method may be used. By using the PCR amplification monitoring method during the gene amplification step in RT-PCR, one can achieve a more quantitative analysis of the expression of a marker gene of the present invention.

**[0057]** In the PCR gene amplification monitoring method, the detection target (DNA or reverse transcript of RNA) is hybridized to probes that are labeled with a fluorescent dye and a quencher which absorbs the fluorescence. When the PCR proceeds and Taq polymerase degrades the probe with its 5'-3' exonuclease activity, the fluorescent dye and the quencher draw away from each other and the fluorescence is detected. The fluorescence is detected in real time. By simultaneously measuring a standard sample in which the copy number of a target is known, it is possible to determine the copy number of the target in the subject sample with the cycle number where PCR amplification is linear (Holland, P. M. et al., 1991, Proc. Natl. Acad. Sci. USA 88: 7276-7280; Livak, K. J. et al., 1995, PCR Methods and Applications 4(6): 357-362; Heid, C. A. et al., 1996, Genome Research 6: 986-994; Gibson, E. M. U. et al., 1996, Genome Research 6: 995-1001). For the PCR amplification monitoring method, for example, ABI PRISM7700 (Applied Biosystems) may be used.

**[0058]** The method of testing for bronchial asthma or a chronic obstructive pulmonary disease of the present invention can be also carried out by detecting a protein encoded by a marker gene. Hereinafter, a protein encoded by a marker gene is described as a "marker protein". For such test methods, for example, the Western blotting method, the immu-



noprecipitation method, and the ELISA method may be employed using an antibody that binds to each marker protein.

**[0059]** Antibodies used in the detection that bind to the marker protein may be produced by techniques known to those skilled in the art. Antibodies used in the present invention may be polyclonal or monoclonal (Milstein, C. et al., 1983, Nature 305 (5934): 537-40). For example, a polyclonal antibody against a marker protein may be produced by collecting blood from mammals sensitized with the antigen, and separating the serum from this blood using known methods. As a polyclonal antibody, serum containing a polyclonal antibody may be used. If necessary, a fraction containing the polyclonal antibody can be further isolated from this serum. Also, a monoclonal antibody may be obtained by isolating immune cells from mammals sensitized with the antigen, fusing these cells with myeloma cells and such, cloning the resulting hybridomas, and then collecting the antibody from the hybridoma culture.

**[0060]** In order to detect a marker protein, such an antibody may be appropriately labeled. Alternatively, instead of labeling the antibody, a substance that specifically binds to the antibody, for example, protein A or protein G, may be labeled to detect the marker protein indirectly. More specifically, such a detection method includes the ELISA method.

**[0061]** A protein or a partial peptide thereof used as an antigen may be obtained, for example, by inserting a marker gene or a portion thereof into an expression vector, introducing the construct into an appropriate host cell to produce a transformant, culturing the transformant to express the recombinant protein, and purifying the expressed recombinant protein from the culture or the culture supernatant. Alternatively, the amino acid sequence encoded by a gene or an oligopeptide comprising a portion of the amino acid sequence encoded by a full-length cDNA are chemically synthesized to be used as an immunogen.

**[0062]** Furthermore, in the present invention, a test for an allergic disease can be performed using as an index not only the expression level of a marker gene but also the activity of a marker protein in a biological sample. Activity of a marker protein means the biological activity intrinsic to the protein. Typical methods for measuring the activity of each protein are described below.

#### [Protease]

**[0063]** A protease sample is electrophoresed under a non-reducing condition in an SDS polyacrylamide gel copolymerized with a substrate such as gelatin. After electrophoresis, the gel is allowed to stand still in an appropriate buffer at 37°C for 16 hours. The gel is stained with Coomassie Brilliant Blue R250 after 16 hours. The protease activity can be assessed by verifying that the electrophoretic position corresponding to the protease is not stained on the gel, i.e., gelatin at that position has been hydrolyzed.

Chen, J. M. et al., J. Biol. Chem. 266, 5113-5121 (1991)

#### [Protease inhibitor]

**[0064]** A protease inhibitor is electrophoresed under a non-reducing condition in an SDS polyacrylamide gel copolymerized with a protease substrate such as gelatin. After electrophoresis, the gel is allowed to stand still in an appropriate buffer containing a protease at 37°C for 16 hours. After 16 hours, the gel is stained with Coomassie Brilliant Blue R250. The activity of the protease inhibitor can be assessed by verifying that the electrophoretic position corresponding to the protease inhibitor is not stained on the gel, i.e., gelatin has not been hydrolyzed at that position.

Greene J. et al., J. Biol. Chem. 271, 30375-30380 (1996)

#### [Transcription factor]

**[0065]** A transcription factor is incubated at room temperature with a double-stranded oligo DNA, which has been labeled with <sup>32</sup>P or such and contains a target sequence of the transcription factor. The incubation allows the transcription factor to bind to the oligo DNA. After incubation, the sample is electrophoresed in a native polyacrylamide gel without SDS. The mobility of the labeled oligo DNA is determined using the radioactivity of <sup>32</sup>P or such as an index. When the transcription factor has the activity of binding to the oligo DNA, the mobility of the labeled oligo DNA decreases and thus the band shifts to a higher-molecular-weight position. The binding specificity for the target sequence can be assessed by verifying that an excess amount of non-labeled double-stranded oligo DNA inhibits the binding between the transcription factor and the labeled oligo DNA.

**[0066]** In addition, the ability to activate transcription by a transcription factor can be estimated by a procedure which comprises the steps of: co-introducing into cells of a cell line such as HeLa or HEK293, an expression vector comprising a reporter gene such as chloramphenicol acetyltransferase (CAT) downstream of a target sequence and another expression vector comprising the transcription factor gene downstream of a promoter from human cytomegalovirus (CMV), and after 48 hours, preparing a cell lysate and determining the expression level of CAT in the lysate.

Zhao F. et al., J. Biol. Chem. 276, 40755-40760 (2001)

## [Kinase]

**[0067]** A kinase is added to a buffer (20 mM HEPES, pH7.5, 10 mM MgCl<sub>2</sub>, 2 mM MnCl<sub>2</sub>, 2 mM dithiothreitol, and 25 μM ATP) containing myelin basic protein as a substrate, and then [γ-<sup>32</sup>P]ATP is added thereto. The resulting mixture is incubated at 37°C for 10 minutes. After 10 minutes, Laemmli buffer is added to stop the reaction, and the reaction solution is subjected to SDS polyacrylamide gel electrophoresis. After electrophoresis, the gel is dried and the radio-activity of the phosphorylated myelin basic protein is detected on X-ray film.

Park S.Y. et al., J. Biol. Chem. 275, 19768-19777 (2000)

## [Phosphatase]

**[0068]** A phosphatase is added to a buffer (25 mM MES (pH 5.5), 1.6 mM dithiothreitol, and 10 mM pNPP) containing p-nitrophenyl phosphate (pNPP) as a substrate. The resulting mixture is incubated at 37°C for 30 minutes. After 30 minutes, 1N NaOH is added to stop the reaction, and the absorbance at 405 nm, a result of pNpp hydrolysis, is measured.

Aoyama K. et al., J. Biol. Chem. 276, 27575-27583 (2001)

## [Chemokine and chemokine receptor]

**[0069]** Cells overexpressing a chemokine receptor are suspended in Hank's balanced salt solution containing the calcium-sensitive fluorescent dye fura-2. The cells are stimulated with the chemokine. An increase in the intracellular calcium level that resulted from the chemokine stimulation is measured with a fluorescence detector such as LS50B (Perkin Elmer).

Zhou N. et al., J. Biol. Chem. 276, 42826-42833 (2001)

## [Cytokine and cytokine receptor]

**[0070]** Cells expressing a cytokine receptor are stimulated with a cytokine. The resulting cell proliferation is assessed by thymidine uptake.

**[0071]** Alternatively, it is possible to assess the cytokine-mediated activation of a transcription factor downstream of the cytokine receptor based on the expression of a reporter gene such as luciferase.

Piek E. et al., J. Biol. Chem. 276, 19945-19953 (2001)

## [Ion channel]

**[0072]** An ion channel-containing cell membrane is attached to the open end, the area of which is a few μm<sup>2</sup>, of a glass pipette. The ion channel activity can be determined by the patch-clamp method which comprises measuring the electric current passing through the channel when a potential difference is generated between the inside and outside of the pipette.

Hamill, O. P. et al., Pfluegers Arch. 391, 85-100 (1981)

## [Cell adhesion molecule]

**[0073]** Cells expressing an adhesion molecule on the cell surface are incubated in a plate coated with the ligand of the molecule. The number of cells adhering to the plate is determined.

Fujiwara H. et al., J. Biol. Chem. 276, 17550-17558 (2001)

## [Extracellular matrix protein]

**[0074]** A suspension of cells expressing a receptor of an extracellular matrix protein such as integrin, is added to a plate coated with an extracellular matrix protein. The plate is incubated at 37°C for 1 hour. After incubation, the cells are fixed and a DNA-binding fluorescent dye such as Hoechst 33342, is added thereto. After the reaction, the fluorescence intensity is determined using a fluorometer. The number of adhered cells quantified based on the fluorescence intensity is used to assess the activity of the extracellular matrix protein.

Miyazaki K. et al., Proc. Natl. Acad. Sci. U. S. A. 90, 11767 (1993)

**[0075]** Normally, a biological material collected from a subject is used as a sample in the testing method of the present invention. A preferred biological sample is blood. Blood samples include whole blood, and plasma and serum prepared from whole blood. The biological sample of the present invention includes sputum, secretions from the nasal mucous

membrane, bronchoalveolar lavage fluid, exfoliated airway epithelial cells, in addition to blood. Methods for collecting biological samples are known in the art.

**[0076]** When the biological sample is cells such as respiratory tract epithelial cells, samples for immunological measurements of the aforementioned proteins can be made by preparing a lysate. Alternatively, samples for measuring mRNA corresponding to the aforementioned genes can be prepared by extracting mRNA from this lysate. A commercially available kit is useful when extracting a lysate or mRNA from a biological sample. Alternatively, biological samples in the liquid form such as blood, nasal mucous secretions, and bronchoalveolar lavage fluids can be made into samples for measurement of proteins and genes by diluting with a buffer and such, as necessary.

**[0077]** A lysate prepared from an above-mentioned biological sample can be used as a sample in immunological assays for marker proteins. Alternatively, mRNA extracted from the lysate can be used as a sample in assays for mRNA corresponding to marker genes. A commercially available kit can be used to prepare a lysate or to extract mRNA from a biological sample. When a marker protein is secreted into blood, the expression level of the encoding gene can be compared by determining the amount of the protein of interest in a sample of a subject's body fluid such as blood or serum. The sample can be diluted with a buffer or such, as required, to be used in the method of the present invention.

**[0078]** When mRNA is measured, the measured value of the expression levels of marker genes in the present invention can be corrected by known methods. As a result of correction, variations in gene expression levels in cells can be compared. Based on the measured values of the expression levels of genes that do not show great variations in each cell in the above biological samples (for example, housekeeping genes), the correction of the measured values is done by correcting the measured values of the expression levels of marker genes in this invention. Genes whose expression level does not greatly vary include  $\beta$ -actin and GAPDH.

**[0079]** Furthermore, the present invention provides reagents for the testing methods of the present invention. Specifically, the present invention relates to a reagent for testing bronchial asthma or a chronic obstructive pulmonary disease, which comprise a polynucleotide comprising the nucleotide sequence of a marker gene, or an oligonucleotide having at least 15 nucleotides and comprising a nucleotide sequence complementary to the complementary strand of the nucleotide sequence of the marker gene. The present invention also relates to a reagent for testing bronchial asthma or a chronic obstructive pulmonary disease, which comprises an antibody recognizing a marker protein.

**[0080]** The oligonucleotide or antibody constituting the reagents of the present invention can be pre-labeled with an appropriate labeling substance depending on the assay. Alternatively, the oligonucleotide or antibody constituting the reagents of the present invention can be pre-immobilized on an appropriate support depending on the assay. Furthermore, the reagents of the present invention can be prepared as test kits in combination with an additive necessary for the testing and storage, in addition to the oligonucleotide or antibody described above. Exemplary additives constituting such a kit are listed below. If required, these may be added in advance. A preservative may also be added to each.

**[0081]** A buffer for diluting the reagent or biological sample;

positive control;

negative control;

substrate to be used for detecting a label;

reaction vessel; and

instruction manual describing assay protocols.

**[0082]** The expression level of a marker gene of the present invention has been confirmed to change in respiratory epithelial cells upon IL-13 stimulation in comparison to that in non-stimulated respiratory epithelial cells. Thus, bronchial asthma or a chronic obstructive pulmonary disease can be tested using as an index the expression level of a marker gene.

**[0083]** Tests for bronchial asthma or a chronic obstructive pulmonary disease according to the present invention include, for example, the following. Even if a patient is not diagnosed as being affected with bronchial asthma or a chronic obstructive pulmonary disease in a routine test in spite of symptoms suggesting these diseases, whether or not such a patient is suffering from bronchial asthma or a chronic obstructive pulmonary disease can be easily determined by performing a test according to the present invention. More specifically, when the marker gene is one of the genes according to (a) mentioned above, an increase in the expression level of the marker gene in a patient whose symptoms suggest bronchial asthma or chronic obstructive pulmonary disease, implies that the symptoms are caused by bronchial asthma or a chronic obstructive pulmonary disease. Alternatively, when the marker gene is one of the genes according to (b) mentioned above, likewise, a decrease in the expression level of a marker gene in a patient whose symptoms suggest bronchial asthma or a chronic obstructive pulmonary disease, implies that the symptoms are caused by bronchial asthma or a chronic obstructive pulmonary disease.

**[0084]** In addition, the present invention facilitates tests to determine whether bronchial asthma or a chronic obstructive pulmonary disease is improving in a patient. In other words, the present invention can be used to judge the therapeutic effect on bronchial asthma or a chronic obstructive pulmonary disease. Furthermore, when the marker gene is one of the genes according to (a), an increase in the expression level of the marker gene in a patient, who has been diagnosed as being affected by bronchial asthma or a chronic obstructive pulmonary disease, implies that the disease

has progressed more. Alternatively, when the marker gene is one of the genes according to (b) , likewise a decrease in the expression level of the marker gene in a patient, who has been diagnosed as being affected by bronchial asthma or a chronic obstructive pulmonary disease, implies that the disease has progressed more.

**[0085]** Furthermore, the severity of bronchial asthma or a chronic obstructive pulmonary disease may also be determined based on the difference in expression levels. In other words, when the marker gene is one of the genes according to (a), the degree of increase in the expression level of the marker gene is correlated with the severity of bronchial asthma or chronic obstructive pulmonary disease. Alternatively, when the marker gene is one of the genes according to (b) , the degree of decrease in the expression level of the marker gene is correlated with the severity of bronchial asthma or chronic obstructive pulmonary disease.

**[0086]** The present invention also relates to animal models for bronchial asthma or chronic obstructive pulmonary disease, comprising a nonhuman transgenic animal in which the expression level of a marker gene according to (a) or a gene functionally equivalent to the marker gene has been elevated in the respiratory epithelium.

**[0087]** The present invention revealed that stimulation with IL-13 increased the expression level of a marker gene according to (a) in respiratory epithelial cells. Thus, an animal in which the expression level of a marker gene according to (a) or a gene functionally equivalent to the marker gene in respiratory epithelial cells has been artificially increased, can be used as an animal model for bronchial asthma or chronic obstructive pulmonary diseases.

**[0088]** The present invention also relates to an animal model for bronchial asthma or chronic obstructive pulmonary disease, which is a nonhuman transgenic animal in which the expression level of a marker gene according to (b) , or a gene functionally equivalent to the marker gene, has been decreased in respiratory epithelial cells.

**[0089]** The present invention revealed that stimulation with IL-13 decreased the expression level of a marker gene according to (b) in respiratory epithelial cells. Thus, an animal in which the expression level of a marker gene according to (b) or a gene functionally equivalent to the marker gene in respiratory epithelial cells has been artificially decreased can be used as an animal model for bronchial asthma or chronic obstructive pulmonary disease.

**[0090]** A "functionally equivalent gene" as used in this invention is a gene that encodes a protein having an activity similar to a known activity of a protein encoded by the marker gene. A representative example of a functionally equivalent gene includes a counterpart of a marker gene of a subject animal, which is intrinsic to the animal.

**[0091]** For example, genes according to group (A) and group (B) described above are functionally equivalent mouse genes. The genes according to group (A) and group (B) described above are used as preferred marker genes in performing the screenings according to the present invention using mice.

**[0092]** In addition, the present invention identified the mouse counterpart genes of the marker genes according to (a) and (b). Such counterpart genes are shown in (A) and (B) , respectively. These counterparts are genes whose expression levels in respiratory epithelial cells showed a twofold or more difference between the mouse model for bronchial asthma and normal mice. Thus, an animal model for bronchial asthma can be created by controlling the expression level of a counterpart gene or administering a counterpart gene. Namely, the present invention relates to a method for creating an animal model for bronchial asthma or a chronic obstructive pulmonary disease by controlling the expression level of a gene selected from the group of genes according to (A) or (B). Alternatively, the present invention relates to a method for creating an animal model for bronchial asthma or a chronic obstructive pulmonary disease by administering the protein encoded by a gene selected from the group of genes according to (A) or (B) , or administering an antibody against the protein.

**[0093]** First, similarly to the group of genes according to (a), the group of genes according to (A) can induce bronchial asthma or a chronic obstructive pulmonary disease by the increase in their expression levels. Alternatively, an animal model for bronchial asthma or chronic obstructive pulmonary disease can be created by introducing a gene selected from such groups of genes, or by administering a protein encoded by such a gene. Such counterpart genes or proteins are preferably introduced/administered to mice, because they derive from mice.

**[0094]** In addition, similarly to the group of genes according to (b), the group of genes according to (B) can induce bronchial asthma or chronic obstructive pulmonary disease by the suppression of their expression levels. Alternatively, bronchial asthma or chronic obstructive pulmonary disease can be induced by suppressing the expression of a gene selected from such groups of genes or the activity of a protein encoded by such a gene. An antisense nucleic acid, a ribozyme, or an RNAi can be used to suppress the expression. The activity of a protein can be controlled effectively by administering a substance that inhibits the activity, such as an antibody. Namely, in an animal inherently having a gene selected from the group of genes according to (B) , i.e. , mice, bronchial asthma or chronic obstructive pulmonary disease is induced by administering such a substance.

**[0095]** The animal model for bronchial asthma or chronic obstructive pulmonary disease is useful for detecting physiological changes due to bronchial asthma or chronic obstructive pulmonary disease. Furthermore, the use of the animal model for bronchial asthma or chronic obstructive pulmonary disease to reveal additional functions of marker genes and evaluate drugs whose targets are the marker genes, also have a great significance.

**[0096]** In addition, the animal model for bronchial asthma or chronic obstructive pulmonary disease of the present invention can be used to elucidate the mechanism underlying bronchial asthma or chronic obstructive pulmonary dis-

ease and also to test the safety of compounds obtained by screening. For example, when an animal model for bronchial asthma or chronic obstructive pulmonary disease according to the present invention develops the symptoms of asthma or chronic obstructive pulmonary disease, or when a measured value involved in a certain allergic disease alters in the animal, a screening system can be constructed to explore compounds having activity to alleviate the disease.

**[0097]** As used herein, the expression "an increase in the expression level" refers to any one of the following: where a marker gene introduced as a foreign gene is expressed artificially; where the transcription of a marker gene intrinsic to the subject animal and the translation thereof into the protein are enhanced; or where the hydrolysis of the protein, which is the translation product, is suppressed.

**[0098]** As used herein, the expression "a decrease in the expression level" refers to either the state in which the transcription of a marker gene of the subject animal and the translation thereof into the protein are inhibited, or the state in which the hydrolysis of the protein, which is the translation product, is enhanced. The expression level of a gene can be determined, for example, by a difference in signal intensity on a DNA chip as shown below in the Example. Furthermore, the activity of the translation product -the protein- can be determined by comparing with that in the normal state.

**[0099]** Representative transgenic animals include: animals to which a marker gene has been introduced and expressed artificially; marker gene knockout animals; and knock-in animals in which another gene has been substituted for a marker gene. A transgenic animal, into which an antisense nucleic acid of a marker gene, a ribozyme, a polynucleotide having an RNAi effect, or a DNA functioning as a decoy nucleic acid or such has been introduced, can be used as the transgenic animal of the present invention. Such transgenic animals also include, for example, animals in which the activity of a marker protein has been enhanced or suppressed by introducing a mutation(s) into the coding region of the gene, or the amino acid sequence has been modified to become resistant or susceptible to hydrolysis. Mutations in an amino acid sequence include substitutions, deletions, insertions, and additions. In addition, the expression itself of a marker gene of the present invention can be controlled by introducing a mutation (s) into the transcriptional regulatory region of the gene.

**[0100]** An amino acid substitution is preferably a "conservative amino acid substitution" -a mutation of an amino acid into a different amino acid that conserves the properties of the amino acid side-chain-. A "conservative amino acid substitution" is a replacement of one amino acid residue belonging to one of the following groups having a chemically similar side chain with another amino acid in the same group. Groups of amino acid residues having similar side chains have been defined in the art. These groups include amino acids with basic side chains (e.g., lysine, arginine, histidine), acidic side chains (e.g., aspartic acid, glutamic acid), uncharged polar side chains (e.g., glycine, asparagine, glutamine, serine, threonine, tyrosine, cysteine), nonpolar side chains (e.g., alanine, valine, leucine, isoleucine, proline, phenylalanine, methionine, tryptophan), beta-branched side chains (e.g., threonine, valine, isoleucine) and aromatic side chains (e.g., tyrosine, phenylalanine, tryptophan, histidine).

**[0101]** The number of amino acids that are mutated is not particularly restricted, as long as the activity is maintained. Normally, it is within 50 amino acids, preferably within 30 amino acids, more preferably within 10 amino acids, and even more preferably within 3 amino acids. The site of mutation may be any site, as long as the activity is maintained.

**[0102]** Methods for obtaining transgenic animals by targeting a particular gene are known. That is, a transgenic animal can be obtained by any of the following methods: mixing a gene and ovum and treating with calcium phosphate; introducing a gene directly into the nucleus of an oocyte in a pronuclei with a micropipette under a phase contrast microscope (microinjection method, US Patent No. 4873191); or using embryonic stem cells (ES cells). Furthermore, a method for infecting ovum with a gene-inserted retroviral vector, the sperm vector technique for transducing a gene into ovum via sperm, or such, have also been developed. The sperm vector technique is a gene recombination technique for introducing a foreign gene by fertilizing ovum with sperm after a foreign gene has been incorporated into sperm by adhesion or the electroporation method, etc. (M. Lavitrano, et al., Cell, 57, 717, 1989).

**[0103]** When a promoter whose transcription activity is controlled by a substance such as an appropriate drug is used in the expression vector, the expression level of a foreign marker gene can be regulated by administering the substance to the transgenic animal.

**[0104]** Transgenic animals used as the animal model for bronchial asthma or chronic obstructive pulmonary disease of the present invention can be produced using all vertebrates except humans. More specifically, transgenic animals having various transgenes or modified gene expression levels are being produced using vertebrates such as mice, rats, rabbits, miniature pigs, goats, sheep, monkeys, dogs, cats, or cattle.

**[0105]** In addition, the present invention relates to screening methods for candidate compounds for therapeutic agents to treat bronchial asthma or chronic obstructive pulmonary disease. According to the present invention, a marker gene is selected from the group according to the above (a) or (b). When the gene is selected from the group according to (a), the expression level is significantly elevated in respiratory epithelial cells stimulated with IL-13 in comparison with unstimulated respiratory epithelial cells. When the gene is selected from the group according to (b), the expression level is significantly decreased in respiratory epithelial cells stimulated with IL-13 in comparison with unstimulated respiratory epithelial cells.

[0106] Thus, when the marker gene belongs to group (a), a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease can be obtained by selecting a compound capable of decreasing the expression level of the marker gene. On the other hand, when the marker gene belongs to group (b), a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease can be obtained by selecting a compound capable of increasing the expression level of the marker gene.

[0107] As used herein, the expression "a compound that increases the expression level of a gene" refers to a compound that promotes any one of the steps of gene transcription, gene translation, or expression of a protein activity. On the other hand, the expression "a compound that decreases the expression level of a gene", as used herein, refers to a compound that inhibits any one of these steps.

[0108] A method of screening for a therapeutic agent for an allergic disease of this invention can be carried out either *in vivo* or *in vitro*. This screening method can be performed, for example, according to the steps as described below:

- (1) administering a candidate compound to an animal subject;
- (2) measuring the expression level of a marker gene in a biological sample from the animal subject;
- (3) selecting a compound that decreases the expression level of a marker gene belonging to group (a), or a compound that increases the expression level of a marker gene belonging to group (b), as compared to that in a control with which the candidate compound has not been contacted;

[0109] In the screening methods of the present invention, a gene functionally equivalent to any one of the genes selected from the group according to (a) or (b) described above, can be used as a marker gene. A representative example of a functionally equivalent gene includes a counterpart marker gene of a subject animal, which is intrinsic to the animal.

[0110] An animal used in the screening method of the present invention includes, for example, an animal model for bronchial asthma known in the art. For example, the animal model for ovalbumin (hereinafter abbreviated as "OVA") antigen-exposed bronchial hypersensitivity has been reported as an animal model for bronchial asthma. Bronchial hypersensitivity can be induced as follows: 50 µg OVA and 1 mg aluminum hydroxide as an adjuvant are injected into the peritoneal cavity of Balb/c mice (male, seven-week old), and after 10 days, the mice are sensitized with OVA by the same procedure. Then, after 10 days, 1% OVA is given to the mice by inhalation using Ultra-nebulizer model UN701 (Azwel, Inc.) for 30 minutes every four days three times in total. The enhanced bronchial hypersensitivity is monitored by detecting respiratory constriction caused by acetylcholine (6.25-2000 mg/kg) using a respirator (model 131, New England Medical Instruments Inc.) 24 hours after the final antigen inhalation (Nagai H. et al, Int Arch Allergy Immunol; 108: 189-195, 1995).

[0111] Furthermore, an animal model for chronic obstructive pulmonary disease is also known in the art. The animal model can be created using mice, rats, rabbits, miniature pigs, dogs, horses, etc. For example, an animal model for chronic obstructive pulmonary disease, which develops symptoms such as pulmonary emphysema, can be created by giving erastase to a New Zealand white rabbit three times by inhalation (Brenner M. et al., Chest, 121, 201-209, 2002). The screening according to the present invention can be practiced by administering a candidate compound to such an animal model and then monitoring variations in the expression level of a marker gene of the present invention.

[0112] A screening method using an animal model typically comprises monitoring the expression level of a marker gene that is inherently contained in the animal model. Thus, for example, the expression level of the mouse homolog of a marker gene is measured when the screening method uses a mouse model. Mouse genes according to (A) are genes whose expression levels are elevated in respiratory tissues of an OVA antigen-exposed bronchial hypersensitivity mouse model. On the other hand, mouse genes according to (B) are genes whose expression levels are decreased in respiratory tissue of the same mouse model. These mouse homolog genes can be used as marker genes in the screening methods of the present invention.

[0113] In addition to mouse homologs, one skilled in the art can identify similar homologs of various animal species based on the disclosure of the present invention. For example, various genes (or proteins) exhibiting a high homology to the nucleotide sequence or the amino acid sequence of a human marker gene or a mouse homolog can be identified by using homology searches. Alternatively, such homologs derived from other species can be isolated by hybridization to the marker gene.

[0114] However, with respect to screening methods comprising an animal model to which a human gene has been introduced, not only animal homologs but also human genes may be measured as marker genes.

[0115] Thus, the influence of a candidate compound for a pharmaceutical agent on the expression level of a marker gene can be assessed by contacting an animal subject with the candidate compound and monitoring the effect of the compound on the expression level of the marker gene in a biological sample derived from the animal subject. The variation in the expression level of the marker gene in a biological sample derived from the animal subject can be monitored using the same technique as used in the testing method of the present invention described above. Furthermore, based on the evaluation, a candidate compound for a pharmaceutical agent can be selected by screening. A

compound that decreases the expression level is selected as a candidate compound for a pharmaceutical agent, when the marker gene is any one of the genes according to group (a); a compound that increases the expression level is selected as a candidate compound for a pharmaceutical agent, when the marker gene is any one of the genes according to group (b).

**[0116]** More specifically, a screening according to the present invention can be achieved by collecting respiratory epithelial cells as a sample from an animal subject, and comparing the expression level of a marker gene between the sample and a control with which the candidate compound has not been contacted. Methods for collecting and preparing respiratory epithelial cells are known in the art.

**[0117]** An animal subject may be stimulated with an allergen or IL-13 in a screening method of the present invention using an animal subject. The screening can be conducted by administering the candidate compound before or after the stimulation, or simultaneously, and comparing the expression level of a marker gene with that in a control. As a result, an effect of the candidate compound on the expression of a marker gene that responds to such stimulation can be evaluated. A compound having an activity to regulate the response of a marker gene to a stimulation with an allergen or IL-13 can be obtained through the screening.

**[0118]** These screening methods enable the selection of drugs involved in the expression of marker genes in various ways. More specifically, for example, drug candidate compounds having the following actions can be found:

**[0119]** When a marker gene belongs to group (a):

- suppression of a signal transduction pathway to induce the expression of the marker gene;
- suppression of the transcription activity of the marker gene; and
- inhibition of the stabilization of the transcription product of the marker gene or promotion of the decomposition thereof, etc;

**[0120]** When a marker gene belongs to group (b):

- activation of a signal transduction pathway to induce the expression of a marker gene;
- promotion of the transcription activity of the marker gene; and
- stabilization of the transcription product of the marker gene or inhibition of the decomposition thereof, etc;

**[0121]** Furthermore, methods of *in vitro* screening include, for example, a method that comprises contacting cells expressing a marker gene with a candidate compound and selecting a compound that decreases the expression level of a gene when the gene belongs to group (a), or alternatively selecting a compound that increases the expression level of a gene when the gene belongs to group (b). The screening can be conducted, for example, according to a method comprising the steps of:

- (1) contacting a candidate compound with a cell expressing the marker gene;
- (2) measuring the expression level of said gene; and
- (3) selecting a compound that decreases the expression level of a marker gene belonging to group (a) or increases the expression level of a marker gene belonging to group (b), as compared to that in a control with which the compound has not been contacted;

**[0122]** In the present invention, cells expressing a marker gene can be obtained by inserting the marker gene to an appropriate expression vector, and introducing said vector into a suitable host cell. Any vector and host cell may be used as long as it is able to express a marker gene of this invention. Examples of host cells in the host-vector system are *Escherichia coli*, yeast, insect cells, animal cells, and such, and vectors that can be used for respective host cells can be appropriately selected.

**[0123]** Vectors may be introduced into hosts by a biological, physical, or chemical method, or such. Examples of biological methods are methods using viral vectors, methods using specific receptors, and cell-fusion methods (HVJ (Sendai virus) method, polyethylene glycol (PEG) method, electric cell fusion method, microcell-mediated chromosome transfer). Examples of physical methods are the microinjection method, electroporation method, and the method using the gene particle gun (gene gun). Examples of chemical methods are the calcium phosphate precipitation method, liposome method, DEAE-dextran method, protoplast method, erythrocyte ghost method, erythrocyte membrane ghost method, and microcapsule method.

**[0124]** In a screening method of the present invention, cells constituting respiratory tissues, such as epithelial cells and goblet cells can be used as cells expressing a marker gene. More specifically, epithelial cells, goblet cells, endothelial cells, smooth muscle cells, fibroblast cells, mucosal cells, and so on can be used.

**[0125]** Cells constituting respiratory tissues include a cell line established from the respiratory epithelium. Such a cell line can be used preferably in practicing a screening method of the present invention, because homogeneous cells

can be prepared on a large scale and the cells can be cultured by a simple method. Such a respiratory epithelial cell line can be established, for example, by the following procedure. Namely, cells are collected from the lung, trachea, or mucous membrane by protease treatment or such. In some cases, cells can be immortalized and established as cell lines through infection of a virus such as Hepatitis B virus (HBV). A previously established cell line can be used in a screening according to the present invention. Cell lines from the respiratory epithelium, which can be used in the present invention, are listed below. The corresponding accession numbers in the ATCC cell bank are shown within parentheses.

Human lung cancer cell A549 (ATCC No. CCL-185)  
 SHP-77 (ATCC No. CRL-2195)  
 Human bronchial epithelial cell BEAS-2B (ATCC No. CRL-9609)  
 HBE4-E6/E7 (ATCC No. CRL-2078)  
 NL20 (ATCC No. CRL-2503)  
 NCI-H727 (ATCC No. CRL-5815)  
 MeT-5A (ATCC No. CRL-9444)  
 BBM (ATCC No. CRL-9482)  
 BZR (ATCC No. CRL-9483)  
 Human mucosal endothelial cell NCI-H292 (ATCC No. CRL-1848)

**[0126]** A screening method of the present invention can be practiced by contacting a candidate compound with cells of a respiratory epithelial cell line described above and measuring the expression level of a marker gene within the cells. Based on the assay result, a compound that decreases the expression level of the gene is selected when the marker gene belongs to group (a), or a compound that increases the expression level of the gene is selected when the marker gene belongs to group (b), in comparison with a control with which the candidate compound has not been contacted.

**[0127]** When used in a screening method of the present invention, respiratory epithelial cells can be cultured by using a method known in the art. It is preferable to use the AI method described above to culture respiratory epithelial cells. As used herein, the term the "AI method" refers to a culture method in which respiratory epithelial cells are in contact with air on the apical side and the culture medium is supplied from the basolateral membrane side. The term "air" in the AI method refers to air containing 5% CO<sub>2</sub> gas, which is typically used in culturing mammalian cells. In the AI method, the air is used after being sterilized with a filter.

**[0128]** Animal cells are typically cultured in a culture medium under a constant concentration of CO<sub>2</sub>. However, in the AI method, respiratory epithelial cells are cultured in contact with air. The difference between the AI method and the IMM method, which is a conventional culture method for respiratory epithelial cells, is schematically illustrated in Fig. 2.

**[0129]** When cultured by the AI method, respiratory epithelial cells differentiate into goblet cells upon IL-13 stimulation. Thus, the possibility of selecting a compound having an effect on the process of goblet cell differentiation can be increased by pre-culturing respiratory epithelial cells using the AI method. In a screening method of the present invention, respiratory epithelial cells can be treated with IL-13. Specifically, respiratory epithelial cells may be treated with IL-13 before or after contacting a candidate compound with the respiratory epithelial cells, or simultaneously.

**[0130]** When cultured by the AI method, respiratory epithelial cells differentiate into goblet cells upon IL-13 stimulation. Thus, an influence of a candidate compound on the expression level of a marker gene that is expressed in the process of goblet cell differentiation can be determined by monitoring as an index, the effect of the candidate compound on respiratory epithelial cells stimulated with IL-13.

**[0131]** The culture method for respiratory epithelial cells according to the AI method is known in the art. For example, respiratory epithelial cells can be cultured by the AI method based on disclosures in the reports indicated below.

Yamaya M.; Kokyu Vol. 12 No. 10, pp. 1238-1243 (1993);

Yamaya et al., Am. J. Physiol. 262 (Lung Cell Mol. Physiol. 6): L713-L724 (1992)

**[0132]** More specifically, first, tissues of the respiratory epithelium are collected from a living body, and a suspension of respiratory epithelial cells is prepared by protease treatment. A respiratory epithelial cell line may also be used. Respiratory epithelial cells from any mammalian species including humans can be used for the screening methods of the present invention. The resulting respiratory epithelial cells are cultured on a support. A preferred cell density of respiratory epithelial cells on the support falls within about 10<sup>4</sup>-10<sup>8</sup> cells/cm<sup>2</sup>, preferably within about 10<sup>6</sup> cells/cm<sup>2</sup>. Excess cells flowing out of the support are removed and the remaining is further cultured.

**[0133]** A material that can hold respiratory epithelial cells and supply components of the culture medium to the cells from the bottom of the cell layer, is used as a support. For example, a filter with pores whose size is too small for cells to pass through is preferably used as a support in the AI method. The filter used as a support may be coated with a material having affinity for the cells. Such materials include, for example, collagen gel. In the Examples, a commercially



available filter (Millipore; Millicell-HA) coated with Vitrogen gel (CELTRIX; Vitrogen was used after gelation) is used in the AI method. The filter is attached to the bottom of an appropriate cuvette. When a suspension of respiratory epithelial cells is added to the cuvette, a cell layer is formed on the filter. Then, the culture according to the AI method can be done by floating the collagen gel-coated cuvette in a well filled with a medium.

**[0134]** A typical culture medium for respiratory epithelial cells may be used in the culture according to the present invention. Specifically, such a medium includes a culture medium comprising a 1:1 mixture of Dulbecco's MEM and Ham F12, which contains 2% Ultrosor G, and the following antibiotics: penicillin, streptomycin, gentamycin, and amphotericin B.

**[0135]** Thus, the culture according to the AI method can be practiced by adhering cells to the above-mentioned filter, continuing culture in a state in which the filter side contacts the medium and the cell side contacts air. A test compound or IL-13 can be contacted with respiratory epithelial cells by adding it to the medium. In the AI method, IL-13 is added to the medium typically at the concentration of 5-100 ng/mL, preferably of 30-80 ng/mL, for example, of 50 ng/mL in order to stimulate respiratory epithelial cells. It is preferable to use IL-13 derived from the same species from which the respiratory epithelial cells are derived.

**[0136]** In the screening method of this invention, expression levels of marker genes can be compared not only based on the expression levels of proteins encoded by the genes, but also based on the corresponding mRNAs detected. For performing the comparison of expression levels using mRNA, the process for preparing an mRNA sample as described above is carried out in place of the process for preparing a protein sample. Detection of mRNA and protein can be performed by known methods as described above.

**[0137]** Furthermore, based on the disclosure of this invention, it is possible to obtain a transcriptional regulatory region for a marker gene of this invention and construct a reporter assay system. A reporter assay system is a system for screening for a transcriptional regulatory factor that acts on a transcriptional regulatory region using as an index the expression level of a reporter gene localized downstream of the transcriptional regulatory region.

**[0138]** Specifically, the present invention relates to a method of screening for therapeutic agents for bronchial asthma or chronic obstructive pulmonary disease, in which a marker gene is any one selected from the group according to (a) or (b), or a gene functionally equivalent to the marker gene, which method comprises the steps of:

- (1) contacting a candidate compound with a cell into which a vector containing a transcriptional regulatory region of a marker gene and a reporter gene under the control of the transcriptional regulatory region have been introduced;
- (2) measuring the activity of said reporter gene; and
- (3) selecting a compound that decreases the expression level of said reporter gene when the marker gene belongs to group (a), or a compound that increases the expression level of said reporter gene when the marker gene belongs to group (b), as compared to that in a control with which the candidate compound has not been contacted;

**[0139]** Examples of transcription regulatory regions are promoters, enhancers, and furthermore, CAAT box and TATA box, which are normally seen in the promoter region.

**[0140]** Also, as reporter genes, CAT (chloramphenicol acetyltransferase) gene, luciferase gene, growth hormone genes, and such may be used.

**[0141]** Alternatively, a transcription regulatory region of each marker gene of this invention can be obtained as follows. That is, first, a screening is performed by a method that uses PCR or hybridization based on the nucleotide sequences of marker gene cDNA disclosed in this invention, and a genomic DNA clone containing the cDNA sequence is obtained from a human genome DNA library such as the BAC library or YAC library. Based on the obtained genomic DNA sequence, the transcription regulatory region of a cDNA disclosed in this invention is estimated, and the transcription regulatory region is obtained. A reporter construct is constructed by cloning the obtained transcription regulatory region so that it is positioned upstream of the reporter gene. The obtained reporter construct is transfected into a cultured cell strain and is made into a transformant for screening. A candidate compound is contacted with this transformant. The screening of this invention can be performed by selecting a compound capable of decreasing the expression level of a marker gene when the gene belongs to group (a); or selecting a compound capable of increasing the expression level of a marker gene when the marker gene belongs to group (b).

**[0142]** A screening method based on the activity of a marker gene can be used as an *in vitro* screening method of the present invention. Specifically, the present invention relates to a method of screening for a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease, in which the marker gene is any one selected from the group according to (a) or (b), or a gene functionally equivalent to the marker gene, which method comprises the steps of:

- (1) contacting a candidate compound with the protein encoded by a marker gene;
- (2) measuring the activity of said protein; and
- (3) selecting a compound that decreases said activity when the marker gene belongs to group (a), or a compound

that increases said activity when the marker gene belongs to group (b), as compared to that in a control with which the candidate compound has not been contacted.

**[0143]** A compound having the activity of inhibiting the activity of a marker protein of the present invention can be selected through screening using the activity as an index, when the marker gene belongs to group (a). Such a compound that can be obtained as described above suppresses the activity of the respective marker gene belonging to group (a). Thus, the compound can control bronchial asthma or chronic obstructive pulmonary disease by inhibiting the marker protein whose expression has been induced in respiratory epithelial cells.

**[0144]** A compound having the activity of enhancing the activity of a marker protein can be selected through screening using the activity as an index, when the marker gene belongs to group (b). Such a compound that can be obtained as described above enhances the activity of the respective marker gene belonging to group (b). Thus, the compound can control bronchial asthma or chronic obstructive pulmonary disease by activating the marker protein whose expression has been inhibited in respiratory epithelial cells.

**[0145]** In addition to compound preparations synthesized by existing chemical methods, such as steroid derivatives and compound preparations synthesized by combinatorial chemistry, candidate test compounds used in such screenings include, mixtures of multiple compounds such as extracts from animal or plant tissues, or microbial cultures, and their purified preparations.

**[0146]** A polynucleotide, antibody, cell strain, or model animal necessary for various screening methods according to this invention can be combined in advance into a kit. A substrate compound used for the detection of a marker, a medium and vessel for cell culturing, positive and negative standard samples, and furthermore, a manual describing how to use the kit, may also be packaged in the kit. For example, such a kit may have a combination of a filter or a filter-attached cuvette to be used in the culture of respiratory epithelial cells according to the AI method, a culture well in which the cuvette is installed and the culture is maintained, a culture medium, and such.

**[0147]** A compound selected by a screening method of the present invention can be used as a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease. An antisense nucleic acid or a ribozyme capable of suppressing the expression level of a marker gene according to (a), or a polynucleotide that suppresses the expression of the gene through an RNAi effect can also be used as a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease.

**[0148]** Furthermore, an antibody recognizing a peptide comprising the amino acid sequence of a protein encoded by any one of the genes according to (a) can also be used as a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease. Each marker gene according to (a) is a gene whose expression level is increased in respiratory epithelial cells stimulated with IL-13. Thus, a therapeutic effect on bronchial asthma or chronic obstructive pulmonary disease can be achieved by suppressing the expression of the genes or the function of proteins encoded by the genes.

**[0149]** In addition, any marker gene according to (b) and the protein encoded by the gene can be used as a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease.

**[0150]** A therapeutic agent for an allergic disease according to this invention can be formulated by including a compound selected by a screening method of the present invention as an active ingredient, and mixing it with a physiologically acceptable carrier, excipient, diluent, or such. The therapeutic agent can be administered orally or parenterally to ameliorate the allergy symptoms.

**[0151]** Oral drugs can take any dosage form selected from the group of granules, powders, tablets, capsules, solutions, emulsions, suspensions, etc. Injections can include subcutaneous injections, intramuscular injections, or intraperitoneal injections.

**[0152]** Furthermore, when the compound to be administered comprises a protein, a therapeutic effect can be achieved by introducing a gene encoding the protein into the living body using gene therapy techniques. Techniques for treating diseases by introducing a gene encoding a therapeutically effective protein into the living body and expressing it therein are known.

**[0153]** Alternatively, an antisense nucleic acid, a ribozyme, or a polynucleotide that suppresses the expression of a corresponding gene by an RNAi effect can be incorporated downstream of an appropriate promoter sequence to be administered as an expression vector of an antisense RNA, a ribozyme, or an RNA having the RNAi effect. When this expression vector is introduced into mononuclear cells of an allergy patient, the therapeutic effect on the allergy can be achieved by reducing the expression level of the gene by expressing a corresponding antisense nucleic acid, ribozyme, or polynucleotide that suppresses the expression of a corresponding gene by an RNAi effect. *In vivo* or *ex vivo* methods are known for introducing the expression vector into mononuclear cells.

**[0154]** The expression "antisense RNA" refers to an RNA comprising a nucleotide sequence complementary to the sense sequence of a gene. When an antisense RNA is used to suppress gene expression, such an RNA typically comprises a nucleotide sequence of 15 or more consecutive nucleotides, for example, 20 or more consecutive nucleotides, or 30 or more consecutive nucleotides. For example, an antisense nucleic acid capable of hybridizing to a region

comprising an initiation codon is thought to be highly effective in suppressing the expression of the corresponding gene.

**[0155]** The term "ribozyme" refers to an RNA that has the catalytic activity of digesting RNA in a nucleotide sequence-specific manner. There are two types of ribozymes: hammerhead ribozymes and hairpin ribozymes. Both ribozymes are composed of a nucleotide sequence portion complementary to the region to be digested and a nucleotide sequence portion that maintains the structure required for the catalytic activity. The nucleotide sequence complementary to the region to be digested can be arbitrary. Therefore, when the nucleotide sequence of this region is set to be complementary to the nucleotide sequence of a target gene, a ribozyme can be designed to control the expression of a marker gene.

**[0156]** The expression "RNAi (RNA interference) effect" refers to the phenomenon where a double-stranded RNA comprising a nucleotide sequence identical to that of an mRNA strongly suppresses the expression of the mRNA. Thus, such a double-stranded RNA comprising a nucleotide sequence identical to that of the mRNA of a marker gene can be used to suppress the expression of the marker gene. A double-stranded RNA comprising a nucleotide sequence having at least 20 or more consecutive nucleotides is preferably used to exert an RNAi effect. The double strand may be composed of separate strands or a stem-and-loop structure of a single RNA chain.

**[0157]** With respect to an antisense nucleic acid, a ribozyme, or a polynucleotide exerting the RNAi effect, a complementary nucleotide sequence and an identical nucleotide sequence are not limited to a perfectly complementary nucleotide sequence and a perfectly identical nucleotide sequence, respectively. When having a high sequence complementarity or identity, the RNAs exhibit the activity of suppressing expression. When having typically 70% or higher, preferably 80% or higher, more preferably, 90% or higher, still more preferably 95% or higher, for example, 98% or higher identity to a nucleotide sequence or a nucleotide sequence complementary to a nucleotide sequence, an RNA can be deemed to have a high identity or complementarity.

**[0158]** Although the dosage may vary depending on the age, sex, body weight, and symptoms of a patient, and also treatment effects, method for administration, treatment duration, type of active ingredient contained in the drug composition, or such, it can be usually administered in the range of 0.1 mg to 500 mg, preferably 0.5 mg to 20 mg per dose for an adult. However, since the dosage varies according to various conditions, an amount less than the above-described dosage may be sufficient in some cases, whereas in others, a dosage exceeding the above-described range may be required.

**[0159]** The present invention also provides a DNA chip for diagnosing bronchial asthma or chronic obstructive pulmonary disease, on which a probe has been immobilized. The probe is used to detect a marker gene that is at least a single gene selected from group (a) or group (b). There is no limitation on the type of the marker gene. The more the marker gene number, the more are the markers that can be used for the diagnosis. In general, the accuracy of diagnosis is high if more markers are used. When multiple marker genes are detected, it is advantageous to select genes having different properties. Genes that are assumed to be different with respect to the mechanism of expression level variation or and the function of the encoded proteins may be defined as "genes having different properties".

**[0160]** Exemplary combinations of marker genes are shown below. These combinations can enhance the accuracy of allergy testing.

[Two or more genes selected from the group consisting of marker genes for proteases and protease inhibitors]

**[0161]** Proteases and protease inhibitors can serve as markers for the balance between tissue disruption and construction. Specifically, a chip for testing allergic bronchial asthma or chronic obstructive pulmonary disease can be prepared by accumulating probes for detecting genes selected from genes belonging to the protease group and protease inhibitor group among the marker genes of the present invention. Marker genes belonging to each group are listed at the end of this specification.

[Two or more genes selected from the group consisting of marker genes for cytokines, cytokine receptors, chemokines, chemokine receptors, CD antigens, antibodies, and antibody receptors]

**[0162]** Any combination of the genes listed above contains a pair of substances that are mutually related as a ligand-and-receptor. An immune response may be viewed as a result of the interaction between these substances. Accordingly, the immunological state of respiratory epithelial tissues may be determined by using these marker genes in combination. A pair of molecules in a ligand-and-receptor relationship may be selected as marker genes. Alternatively, one of the molecules in the pair may be selected as a marker gene when only that molecule has been shown to be a marker gene of the present invention.

[Two or more genes selected from the group consisting of marker genes for cytokines, extracellular matrix proteins, cytoskeletal proteins, cell adhesion molecules, and transcription factors]

**[0163]** Extracellular matrix proteins include collagen. Cytoskeletal proteins include keratin, small proline-rich protein

and involucrin. Cell adhesion molecules include cadherin and desmocollin. Transcription factors include jun, fos, and myc. The degree of the differentiation of respiratory epithelial tissues or remodeling (repair) of inflammatory lesions can be assessed by monitoring the expression levels of marker genes.

[Two or more genes selected from marker genes encoding enzymes]

**[0164]** Once a gene is selected from marker genes encoding enzymes, then it is possible to know which metabolic processes occur in respiratory epithelial cells. For example, the metabolism of lipid mediators and lipid molecules participating in the barrier function of the respiratory epithelium can be determined based on the expression levels of lipid-metabolizing enzymes. Such lipid-metabolizing enzymes include, for example, phospholipase A2, cyclooxygenase-2, prostaglandin D2 synthase, and fatty acid desaturases 1 and 2.

**[0165]** Alternatively, a chip for testing for bronchial asthma or chronic obstructive pulmonary disease, which contains densely immobilized probes capable of detecting genes selected from those constituting groups (a) and (b), is effective in order to achieve a more accurate diagnosis. The selected genes are a combination of any multiple genes. Specifically, typically 10 or more, for example, 30 or more, preferably 50 or more, more preferably 60 or more, still more preferably 80 or more, or 100 or more genes can be selected from group (a). Likewise, typically 10 or more, for example, 30 or more, preferably 50 or more, more preferably 60 or more, still more preferably 80 or more, or 100 or more genes can be selected from group (b). Much more genes, for example, 150 or more, preferably 180 or more, more preferably 200 or more genes may be selected from each of the groups (a) and (b).

**[0166]** The present invention provides marker genes belonging to groups (a) and (b) described below for bronchial asthma or chronic obstructive pulmonary disease:

(a) group of genes whose expression levels are increased in respiratory epithelial cells upon stimulation with IL-13; and

(b) group of genes whose expression levels are decreased in respiratory epithelial cells upon stimulation with IL-13.

**[0167]** The use of the expression level of each gene as a marker makes it possible to establish a method of testing for bronchial asthma or chronic obstructive pulmonary disease; create animal models for bronchial asthma or chronic obstructive pulmonary disease; and screen for candidate compounds for therapeutic agents for treating the diseases. All marker genes of the present invention are genes whose expression levels vary upon stimulation with IL-13 in respiratory epithelial cells cultured by the AI method. The AI method enables the culture of respiratory epithelial cells under conditions similar to the original conditions in the body. Thus, there is a high possibility that the expression levels of marker genes found throughout the present invention are indeed altered upon stimulation with IL-13 in tissues of the respiratory tract. As described herein in Examples, the expression levels of the marker genes of the present invention are indeed increased in the mouse asthma model. Thus, all the marker genes of the present invention can be used as markers for bronchial asthma or chronic obstructive pulmonary disease, and as targets in treating bronchial asthma or chronic obstructive pulmonary disease.

**[0168]** The variation in the expression level of each marker gene of the present invention correlates to the disease state. Thus, bronchial asthma or chronic obstructive pulmonary disease can be treated by controlling the expression levels of the marker genes and the activities of the proteins encoded by the marker genes. For example, when the expression level of a gene of interest is increased in respiratory epithelial cells accompanied by the differentiation of the cells into goblet cells, the expression of the gene or the activity of the encoded protein is inhibited in a therapeutic strategy for treating bronchial asthma or chronic obstructive pulmonary disease. In contrast, when the expression level of a gene of interest is decreased in respiratory epithelial cells, the expression of the gene or the activity of the encoded protein is enhanced in a therapeutic strategy for treating bronchial asthma or chronic obstructive pulmonary disease. Furthermore, the marker genes can be used as novel clinical diagnostic markers to monitor bronchial asthma or chronic obstructive pulmonary disease in the treatment of the diseases.

**[0169]** The expression level of each marker gene provided by this invention can be easily determined, regardless of the type of allergen. Therefore, the overall pathology of an allergic reaction can be understood.

**[0170]** Additionally, the methods of testing for bronchial asthma or chronic obstructive pulmonary disease of this invention have low invasiveness towards patients since analysis of expression levels can be carried out using a biological sample. Furthermore, gene expression analysis has enabled highly sensitive measurements using small amounts of samples. Year after year in gene analysis technology, high throughput methods are being improved and costs are being decreased. Therefore, in the near future, the methods of testing for bronchial asthma or chronic obstructive pulmonary disease of this invention are expected to become important bedside diagnostic methods (methods that can be performed outside labs). In this sense, diagnostic value of the marker genes of this invention is high.

**[0171]** Furthermore, the present invention reveals that the expression level of pendrin in respiratory epithelial cells is increased upon IL-13 stimulation and that the PDS gene encoding pendrin is one of genes participating in the dif-

ferentiation of respiratory epithelium cells into goblet cells. The expression level of pendrin is also increased in the lung of the asthma model mouse, and thus the present invention shows that the PDS gene encoding pendrin is closely associated with bronchial asthma or chronic obstructive pulmonary disease. The development of drugs for suppressing goblet cell differentiation did not start until recently. Thus, the present invention provides a new approach in drug discovery. In addition, the present invention reveals genes participating in goblet cell differentiation, enabling a more fundamental therapy that uses the genes. Furthermore, agents that control the expression level of genes participating in goblet cell differentiation or the activity of proteins participating in goblet cell differentiation can be used in the treatment of diseases characterized by inflammation and overproduction of mucus, such as chronic obstructive pulmonary disease, cystic fibrosis, chronic sinusitis, bronchiectasis, and diffuse panbronchiolitis, as well as asthma.

**[0172]** Any patents, published patent applications, and any prior art references cited herein are incorporated by reference. Hereinafter, the present invention is described more specifically based on Examples, but it is not to be construed as being limited thereto.

#### EXAMPLE 1

##### The air interface (AI) method and the immersed feeding (IMM) method

##### 1. The air interface method:

**[0173]** Approval for this study was obtained from the Ethical Committee of the Faculty of Medicine, The Tohoku University, Japan. Tracheal tissues derived from anatomical specimens were stretched on plates. The epithelia were removed and allowed to stand still in phosphate buffer containing protease (0.05%) at 4°C overnight. The following day, a culture medium containing fetal calf serum was added to the samples to neutralize enzyme activity, and respiratory epithelial cells were isolated by shaking the samples.

**[0174]** After the cell count was determined, cells were plated at the cell density of  $10^6$  cells/cm<sup>2</sup> on a filter membrane with 0.45-μm pores, being attached to the bottom of a Millicell-HA Culture Plate Insert (Millipore Corp.). At the time of plating, Vitrogen gel (Vitrogen from Celtrix Pharmaceuticals, Inc. was used after gelation) was placed on the filter membrane as a growth-supporting material, and the epithelial cells were placed thereon. The Millicell inserts were placed in a 24-well plate (Falcon) containing a culture medium, which was a 1: 1 mixture of Dulbecco's MEM and Ham F12 containing 2% Ultrosor G and the antibiotics, penicillin, streptomycin, gentamycin, and amphotericin B. The cells were incubated overnight. Then, cells that had not adhered to the collagen gel were removed, and the remaining cells were cultured while the cell side was in contact with air (air interface) for approximately two weeks (See Fig. 1). The basic procedures of the AI method by which respiratory epithelial cells were cultured were the same as those described in the following reports:

Yamaya M; Kokyu, Vol. 12, No. 10, pp. 1238-1243 (1993); and  
Yamaya et al., Am. J. Physiol. 262 (Lung Cell Mol. Physiol. 6): L713-L724, 1992.

##### 2. The immersed feeding method (IMM method):

**[0175]** As basically done in the AI method, Vitrogen gel was placed on a filter membrane, and epithelial cells were placed thereon. The IMM method is different from the AI method in the point that the IMM method comprises adding a medium to cover the epithelial cells. Then, the filter membrane was placed in a 24-well plate (Falcon) containing the same medium as that used in the AI method. The cells were incubated for approximately two weeks (See Fig. 2). The basic procedures of the IMM method by which respiratory epithelial cells were cultured were the same as those described in the following reports:

Yamaya M; Kokyu, Vol. 12, No. 10, pp. 1238-1243 (1993); and  
Yamaya et al., Am. J. Physiol. 262 (Lung Cell Mol. Physiol. 6): L713-L724, 1992.

#### EXAMPLE 2

##### Stimulation of bronchial epithelial cells with IL-13

**[0176]** In the AI method in Example 1, human IL-13 (Peprotech, Inc.) was added to the medium at the concentration of 50 ng/mL when changing the medium, every day for 7 days. After 7 days, human IL-13 was added to the medium when the medium was changed, every two days. After 14 days of incubation, cells were treated by PAS staining for acidic sugar chains and Alcian blue staining for basic sugar chains. The result showed that the cells had differentiated

into goblet cells comprising a huge glycoprotein, mucin.

[0177] Human IL-13 was also added in the IMM method. However, goblet cell differentiation was not observed. The objective of this study is to screen genes associated with the differentiation of respiratory epithelial cells into goblet cells upon IL-13 stimulation by the AI method. Therefore, instead of completely differentiated day-14 cells, cells that were in the process of undergoing cell differentiation were harvested at day 3 and day 7. Furthermore, cells from two different lots were used in the culture. The culture conditions used are described below.

Table 1

| Lot 1          |                        |       |       |
|----------------|------------------------|-------|-------|
| Culture method | Stimulation with IL-13 | Day 3 | Day 7 |
| AI             | +                      | 1     | 5     |
| IMM            | +                      | 2     | 6     |
| AI             | -                      | 3     | 7     |
| IMM            | -                      | 4     | 8     |
| Lot 2          |                        |       |       |
| Culture method | Stimulation with IL-13 | Day 3 | Day 7 |
| AI             | +                      | 9     | 11    |
| AI             | -                      | 10    | 12    |

### EXAMPLE 3

#### Preparation of RNA for GeneChips

[0178] Respiratory epithelial cells treated by the procedure described above were lysed with ISOGEN (Nippon Gene Co., Ltd.). RNA was isolated from the solution according to the protocol attached to ISOGEN. Chloroform was added to the solution. After the mixture was stirred and centrifuged, the aqueous layer was collected. Then, isopropanol was added to the aqueous solution. After stirring and centrifuging the solution, the precipitated total RNA was collected. Approximately 5 µg to 15 µg total RNAs were extracted from sample Nos. 1 to 12. The total RNAs were analyzed for gene expression using HG-U95A to HG-U95E from Affymetrix. The type A gene chip comprises about 12,000 probes designed based on the information on the nucleotide sequences of full-length cDNAs. Each of the type B, C, D, and E gene chips comprises about 50,000 probes designed based on the information on the nucleotide sequences of ESTs.

### EXAMPLE 4

#### Synthesis of cRNA for GeneChips

[0179] Single stranded cDNA was prepared from 5 µg of total RNA by reverse transcription using Superscript II Reverse Transcriptase (Life Technologies) following the method of Expression Analysis Technical Manual by Affymetrix, and by using T7-(dT)<sub>24</sub> (Amersham Pharmacia) as a primer. The T7-(dT)<sub>24</sub> primer comprises a nucleotide sequence in which d(T)<sub>24</sub> is added to a T7 promoter nucleotide sequence, as shown below.

**T7-(dT)<sub>24</sub> primer (SEQ ID NO: 1)**

**5'-GGCCAGTGAATTGTAATACGACTCACTATAGGGAGGCGG-(dT)<sub>24</sub>-3'**

[0180] Next, according to Expression Analysis Technical Manual, DNA ligase, DNA polymerase I, and RNase H were added to synthesize double stranded cDNA. After phenol-chloroform extraction of cDNA, the extract was passed through Phase Lock Gels, and was purified by ethanol precipitation.

[0181] Furthermore, using BioArray High Yield RNA Transcription Labeling Kit, biotin-labeled cRNA was synthesized. Approximately 20-50 µg of biotinylated cRNA was synthesized from Sample Nos. 1 to 12. Using RNeasy Spin column (QIAGEN), cRNA was purified and then fragmented by heat treatment.

[0182] 15 µg of this cRNA was added to a hybridization cocktail, according to the Expression Analysis Technical Manual. This was placed in an array and was hybridized for 16 hours at 45°C.

[0183] After the array was washed, streptavidin phycoerythrin was added for staining. After washing, a mixed anti-

body solution of normal goat IgG and biotinylated goat IgG was added to the array. Furthermore, in order to enhance fluorescence intensity, streptavidin phycoerythrin was added again for staining. After washing, this was set in a scanner and was analyzed by the GeneChip software Suite 4.0.

## EXAMPLE 5

### GeneChip analysis

**[0184]** Data analysis was performed using the GeneChip analysis software Suite 4.0. Average Intensity (1) and Background Average (2) were determined by Absolute Analysis, and four average values were obtained (AI method, no stimulation; AI method, IL-13 stimulation; IMM method, no stimulation; and IMM method, IL-13 stimulation) by subtracting (2) from (1). These four values were used as scale factors for comparison analysis.

**[0185]** First, absolute analysis was performed to analyze one chip data. Positives and negatives were determined by comparing the fluorescence intensity of perfect matches and mismatches of a probe set. Determination of the three categories of Absolute Calls, i.e., P (present), A (absent), and M (marginal), were made by values of Pos Fraction, Log Avg, and Pos/Neg:

Pos Fraction; ratio of positive pairs.

Log Avg; average of the log of fluorescence intensity ratio between probe cells of perfect match and mismatch.

Pos/Neg; ratio of the number of positive pairs and negative pairs.

**[0186]** Additionally, Average Difference (Avg Diff), which is the average value of the difference in fluorescence intensities between perfect matching and mismatching probe cells, was calculated for each gene.

**[0187]** Next, Comparison Analysis was performed on two sets of data. For example, comparison was made between the AI method, no stimulation of day 3 and the AI method, IL-13 stimulation of day 3, and the difference in expression levels was ranked as follows. Determination of the 5 categories of difference calls, which are I, D, MI, MD, and NC, were made from values of Inc/Dec, Inc Ratio, Dpos-Dneg Ratio, and Log Avg Ratio Change.

Inc: Number of probe pairs that corresponded to IL-13 stimulation and no stimulation and that were judged to have increased expression levels when stimulated by IL-13.

Dec: Number of pairs judged to have decreased expression levels when stimulated by IL-13.

Inc/Dec: Ratio of the number of pairs judged to be Inc and number of pairs judged to be Dec.

Inc Ratio: Number of pairs judged to be Inc/number of pairs actually used.

Dpos/Dneg Ratio: Ratio between the number of Neg Change subtracted from that of Pos Change, and the number of pairs actually used.

Pos Change: Difference between the number of positive pairs in Absolute Analysis of IL-13 stimulation, and the number of positive pairs in Absolute Analysis of no stimulation.

Neg Change: Difference between the number of negative pairs in Absolute Analysis of IL-13 stimulation, and the number of negative pairs in Absolute Analysis of no stimulation.

Log Avg Ratio Change: Difference between Log Avg in Absolute Analysis of IL-13 stimulation and no stimulation.

Increased: I,

Decreased: D,

Marginally Increased: MI,

Marginally Decreased: MD, and

No Change: NC

**[0188]** 1. A group of genes associated with goblet cell differentiation, which had been narrowed down from the genes on the gene chips of HG-U95A to HG-U95E (group (a)/ a group of genes whose expression levels were increased; and group (b)/ a group of genes whose expression levels were decreased)

**[0189]** The sequences and the number of genes in gene chips A to E, whose expression levels were found to increase by two folds or more or decrease by half or less upon IL-13 stimulation in both Lots 1 and 2 under the culture conditions of the AI method, are shown in each category in Table 2. The column labeled "Increased" contains the sequences and the numbers of genes whose expression levels increased upon IL-13 stimulation. The column labeled "Decreased" contains the sequences and the numbers of genes whose expression levels decreased upon IL-13 stimulation. The annotations on the genes selected using EST chips of B to E are described according to the database NetAffx (TM) of the June/2002 version provided by Affymetrix.

Table 2

| category                       | A chip                     |                           |                            |                           | B chip                     |                           |                            |                           | C chip                     |                           |                            |                           | D chip                     |                           |                            |                           | E chip                     |                           |                            |                           |
|--------------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
|                                | increased<br># of<br>probe | decreased<br># of<br>gene | increased<br># of<br>probe | decreased<br># of<br>gene | increased<br># of<br>probe | decreased<br># of<br>gene | increased<br># of<br>probe | decreased<br># of<br>gene | increased<br># of<br>probe | decreased<br># of<br>gene | increased<br># of<br>probe | decreased<br># of<br>gene | increased<br># of<br>probe | decreased<br># of<br>gene | increased<br># of<br>probe | decreased<br># of<br>gene | increased<br># of<br>probe | decreased<br># of<br>gene | increased<br># of<br>probe | decreased<br># of<br>gene |
| 1 apoptosis                    | 0                          | 0                         | 1                          | 1                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 1                          | 1                         |
| 2 cell adhesion                | 6                          | 6                         | 6                          | 6                         | 2                          | 2                         | 2                          | 2                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 1                          | 1                         | 1                          | 1                         |
| 3 cell cycles                  | 2                          | 1                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 1                          | 1                         | 1                          | 1                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         |
| 4 chemokine                    | 2                          | 2                         | 1                          | 1                         | 1                          | 1                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 1                          | 0                         |
| 5 cytokine related             | 2                          | 2                         | 2                          | 2                         | 1                          | 1                         | 1                          | 1                         | 1                          | 1                         | 0                          | 0                         | 0                          | 0                         | 2                          | 2                         | 0                          | 0                         | 0                          | 0                         |
| 6 cytosolic protein            | 2                          | 2                         | 2                          | 2                         | 1                          | 1                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         |
| 7 enzyme                       | 20                         | 22                        | 19                         | 19                        | 7                          | 8                         | 3                          | 3                         | 1                          | 1                         | 0                          | 0                         | 3                          | 5                         | 1                          | 1                         | 4                          | 5                         | 2                          | 2                         |
| 8 hypothetical protein         | 7                          | 7                         | 4                          | 4                         | 26                         | 25                        | 26                         | 25                        | 8                          | 8                         | 15                         | 14                        | 4                          | 4                         | 0                          | 0                         | 12                         | 12                        | 4                          | 3                         |
| 9 interferon-inducible protein | 14                         | 15                        | 0                          | 0                         | 2                          | 2                         | 0                          | 0                         | 1                          | 1                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 1                          | 1                         | 0                          | 0                         |
| 10 kinase                      | 7                          | 7                         | 4                          | 4                         | 5                          | 5                         | 1                          | 1                         | 0                          | 0                         | 1                          | 1                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         |
| 11 matrix protein              | 0                          | 0                         | 2                          | 3                         | 0                          | 0                         | 1                          | 1                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         |
| 12 membrane protein            | 11                         | 9                         | 12                         | 14                        | 3                          | 3                         | 1                          | 1                         | 3                          | 2                         | 1                          | 1                         | 0                          | 0                         | 0                          | 0                         | 2                          | 2                         | 0                          | 0                         |
| 13 metabolism                  | 4                          | 3                         | 6                          | 6                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         |
| 14 MHC                         | 4                          | 3                         | 2                          | 1                         | 1                          | 1                         | 0                          | 0                         | 1                          | 1                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         |
| 15 MMP related                 | 4                          | 7                         | 2                          | 2                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         |
| 16 oncogenesis                 | 1                          | 1                         | 6                          | 5                         | 2                          | 2                         | 1                          | 1                         | 1                          | 1                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 3                          | 2                         | 0                          | 0                         |
| 17 others                      | 7                          | 7                         | 7                          | 7                         | 8                          | 8                         | 7                          | 6                         | 5                          | 4                         | 3                          | 3                         | 0                          | 0                         | 1                          | 1                         | 4                          | 3                         | 0                          | 0                         |
| 18 P450                        | 0                          | 0                         | 3                          | 2                         | 1                          | 1                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         |
| 19 phosphatase                 | 2                          | 2                         | 2                          | 2                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         |
| 20 protein binding protein     | 1                          | 1                         | 4                          | 4                         | 2                          | 2                         | 2                          | 2                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 1                          | 1                         | 0                          | 0                         |
| 21 proteinase                  | 4                          | 4                         | 1                          | 1                         | 1                          | 1                         | 0                          | 0                         | 2                          | 2                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         |
| 22 proteinase inhibitor        | 5                          | 4                         | 5                          | 4                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 1                         | 1                          | 0                         | 0                          | 0                         |
| 23 S100                        | 0                          | 0                         | 1                          | 1                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         |
| 24 signal transduction         | 6                          | 6                         | 9                          | 8                         | 3                          | 3                         | 0                          | 0                         | 1                          | 1                         | 0                          | 0                         | 1                          | 0                         | 0                          | 1                         | 1                          | 0                         | 0                          | 0                         |
| 25 structural protein          | 2                          | 2                         | 9                          | 7                         | 1                          | 1                         | 1                          | 1                         | 2                          | 2                         | 1                          | 1                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         |
| 26 transcription factor        | 9                          | 9                         | 6                          | 6                         | 2                          | 5                         | 1                          | 1                         | 0                          | 0                         | 2                          | 2                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         |
| 27 transporter                 | 2                          | 2                         | 7                          | 7                         | 0                          | 0                         | 5                          | 5                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 0                          | 0                         | 3                          | 1                         |
| uncategorized                  | 0                          | 0                         | 3                          | 3                         | 11                         | 11                        | 13                         | 13                        | 6                          | 6                         | 2                          | 2                         | 5                          | 5                         | 9                          | 9                         | 1                          | 1                         | 2                          | 2                         |
| sub total                      | 124                        | 124                       | 126                        | 122                       | 80                         | 83                        | 65                         | 63                        | 33                         | 31                        | 27                         | 26                        | 13                         | 15                        | 15                         | 15                        | 34                         | 33                        | 11                         | 10                        |



**[0190]** Tables 3 to 19 (a group of genes whose expression levels increased upon IL-13 stimulation) and Tables 20 to 36 (a group of genes whose expression levels decreased upon IL-13 stimulation) include lists of categorized genes on the chips of HG-U95A to HG-U95E . The Tables also include values of fold changes upon IL-13 stimulation in lot 1 and 2 when the AI method or the IMM method was used.

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Table 3

| Cat. tag | category        | Probe ID   | Chip    | accession | RefSeq    | gene symbol | map location  | lot 1 |       |      | lot 2 |       |      | title  | reference   | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|-----------------|------------|---------|-----------|-----------|-------------|---------------|-------|-------|------|-------|-------|------|--|---|------------------------------|------------------------------|
|          |                 |            |         |           |           |             |               | Day 3 | Day 7 | AI   | Day 3 | Day 7 | AI   |  |   |                              |                              |
| 1        | 2 cell adhesion | 115_at     | HG-U95A | X14787    | NM_003246 | THBS1       | 15q15         | 10.4  |       |      | 4.1   |       |      | thrombospondin 1                                   | Proc. Natl. Acad. Sci. U.S.A. 83:5449-5453 (1986) | 25                           | 548                          |
| 2        | 2 cell adhesion | 1451_s_at  | HG-U95A | D13666    | NM_006475 | OSF-2       | 13q13.2       | 10.5  | 8.8   | 25.4 | 30.6  | 86.8  |      | 46.4 osteoblast specific factor                    | Unpublished - (1992)                              | 26                           | 549                          |
| 3        | 2 cell adhesion | 1620_at    | HG-U95A | D31784    | NM_004932 | CDH6        | 5p15.1-p14    | 4.3   | 4.2   |      | 4.2   | 5.6   | 12.1 | cadherin 6, type 2 (fasciclin-like)                | Cell Regul. 2:261-270 (1991)                      | 27                           | 550                          |
| 4        | 2 cell adhesion | 32640_at   | HG-U95A | M24283    | NM_000201 | ICAM1       | 19p13.3-p13.2 | 6.5   | 3.1   |      | 2.8   | 4.1   |      | intercellular adhesion molecule 1 precursor (1888) | Cell 52 (6): 925-933 (1988)                       | 28                           | 551                          |
| 5        | 2 cell adhesion | 35803_at   | HG-U95A | S82240    | NM_005168 | ARHGE       | 2q23.3        |       | 2.3   |      |       |       |      | 2 ras homolog gene family, member E                | Mol. Cell. Biol. 16:2689-2699 (1996)              | 29                           | 552                          |
| 6        | 2 cell adhesion | 39119_s_at | HG-U95A | AA631972  | NM_004212 | NK4         | 16p13.3       | 4     | 2     | 6    | 2.5   | 4.1   |      | natural killer cell transcript 4                   | J. Immunol. 148:597-603 (1992)                    | 30                           | 553                          |

| Cat. tag | category      | Probe ID | Chip    | accession | RefSeq    | gene symbol | map location | lot 1 |       |    | lot 2 |       |    | title   | reference                             | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|---------------|----------|---------|-----------|-----------|-------------|--------------|-------|-------|----|-------|-------|----|---|---------------------------------------|------------------------------|------------------------------|
|          |               |          |         |           |           |             |              | Day 3 | Day 7 | AI | Day 3 | Day 7 | AI |   |                                       |                              |                              |
| 7        | 3 cell cycles | 1794_at  | HG-U95A | M92287    | NM_001760 | CCND3       | 6p21         | 2.2   |       |    | 2.3   |       |    | cyclin D3   | Genomics 13:575-584 (1996)            | 31                           | 554                          |
| 8        | 4 chemokine   | 35061_at | HG-U95A | AF030514  | NM_005409 | SCYB11      | 4q21.2       | 6.9   | 7.9   |    | 6.8   |       |    | small inducible cytokine subfamily B (Cys-X-Cys), member 11 precursor (I-TAC, IP-9) | J. Biol. Chem. 271:22876-22884 (1996) | 32                           | 555                          |
| 9        | 4 chemokine   | 431_at   | HG-U95A | X02530    | NM_001565 | SCYB10      | 4q21         | 5.2   | 3.9   |    | 4.9   |       |    | small inducible cytokine subfamily B (Cys-X-Cys), member 10 (IP-10)                 | Nature 315:672-676 (1995)             | 33                           | 556                          |

| Cat. tag | category           | Probe ID  | Chip    | accession | RefSeq    | gene symbol | map location | lot 1 |       |     | lot 2 |       |      | title                              | reference                             | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|--------------------|-----------|---------|-----------|-----------|-------------|--------------|-------|-------|-----|-------|-------|------|------------------------------------|---------------------------------------|------------------------------|------------------------------|
|          |                    |           |         |           |           |             |              | Day 3 | Day 7 | AI  | Day 3 | Day 7 | AI   |                                    |                                       |                              |                              |
| 10       | 5 cytokine related | 1018_s_at | HG-U95A | U70881    | NM_000640 | IL13RA2     | Xq13.1-q28   | 10.2  | 5.1   | 4.8 | 5.3   | 15.9  | 35.5 | interleukin 13 receptor, alpha 2   | J. Biol. Chem. 271:16921-16928 (1996) | 34                           | 557                          |
| 11       | 5 cytokine related | 1262_s_at | HG-U95A | M19154    | NM_003238 | TGFBE2      | 1q41         |       | 2     | 3.2 |       | 4.1   | 5.9  | transforming growth factor, beta 2 | EMBO J. 6:3873-3877 (1987)            | 35                           | 558                          |

| Cat. tag | category            | Probe ID | Chip    | accession | RefSeq    | gene symbol | map location | lot 1 |       |     | lot 2 |       |    | title   | reference   | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|---------------------|----------|---------|-----------|-----------|-------------|--------------|-------|-------|-----|-------|-------|----|---|---|------------------------------|------------------------------|
|          |                     |          |         |           |           |             |              | Day 3 | Day 7 | AI  | Day 3 | Day 7 | AI |   |   |                              |                              |
| 12       | 6 cytosolic protein | 276_at   | HG-U95A | L08069    | NM_001539 | DNAJA1      | 9p13-p12     | 2     | 2.5   |     | 2.2   |       |    | DnaJ (Hsp40) homolog subfamily A, member 1    | Biochim. Biophys. Acta. 1174:114-118 (1993)       | 36                           | 559                          |
| 13       | 6 cytosolic protein | 39154_at | HG-U95A | AB52892   | NM_006705 | GADD45G     | 9q22.1-q22.2 | 3.1   | 4.3   | 3.1 | 5.3   |       |    | growth arrest and DNA-damage-inducible, gamma | Proc. Natl. Acad. Sci. U.S.A. 90:2719-2723 (1993) | 37                           | 560                          |

Table 4

| Cat. category | Probe ID   | Chip    | accession | RefSeq                                     | RefSeq                          | gene symbol | map location  | Set 1 |       |       | Set 2 |       |   | title   | reference                             | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|---------------|------------|---------|-----------|--|---------------------------------|-------------|---------------|-------|-------|-------|-------|-------|---|---|---------------------------------------|---------------------------------|---------------------------------|
|               |            |         |           |  |                                 |             |               | Day 3 | Day 7 | Day 7 | Day 3 | Day 7 | Day 7   |   |                                       |                                 |                                 |
| 14 7 enzyme   | 1948_f.at  | HG-U95A | U31511    | NM_000625                                  | NP_000616                       | NOS2A       | 17q11.2-q12   | 5.3   | 4.3   | 9.4   | 2.8   | 14.5  | nitric oxide synthase 2A (inducible, hepatocytes)                             | Proc. Natl. Acad. Sci. U.S.A. 90:3491-3495 (1993)                                     | 38                                    | 561                             |                                 |
| 15 7 enzyme   | 32571.at   | HG-U95A | X68836    | NM_005911                                  | NP_005902                       | MAT2A       | 2p11.2        |       |       | 2.5   | 2.4   |       | 2,8-methionine adenosyltransferase II alpha                                   | Unpublished -- (2001)   | 39                                    | 562                             |                                 |
| 16 7 enzyme   | 32775_r.at | HG-U95A | AB006746  | NM_021105                                  | NP_068928                       | PLSCR1      | 3q23          | 2.9   | 2.6   |       |       | 3     | phospholipid scramblase 1   | J. Biol. Chem. 272 (29): 18240-18244 (1997)   | 40                                    | 563                             |                                 |
| 17 7 enzyme   | 34795.at   | HG-U95A | U84573    | NM_000935                                  | NP_000926                       | PLD2        | 3q23-q24      | 2.3   |       |       |       | 2     | procollagen-hyase, 2-oxoglutarate 5-dioxygenase (lysine hydroxylase) 2        | J. Biol. Chem. 272: 6831-6834 (1997)  | 41                                    | 564                             |                                 |
| 18 7 enzyme   | 34823.at   | HG-U95A | X60708    | NM_001935                                  | NP_001928                       | DPP4        | 2q24.3        |       |       | 3.2   | 3.9   | 7.6   | 10 dipeptidylpeptidase IV (CD26, adenosine deaminase complementing protein 2) | J. Biol. Chem. 267:4824-4833 (1992)   | 42                                    | 565                             |                                 |
| 19 7 enzyme   | 36495.at   | HG-U95A | U21931    | NM_000507                                  | NP_000498                       | FBP1        | 9q22.2-q22.3  | 3.2   |       |       |       | 4.4   | fructose-1,6-bisphosphatase (FBP1) gene, exon 7                               | Proc. Natl. Acad. Sci. U.S.A. 85:6904-6908 (1988)                                     | 43                                    | 566                             |                                 |
| 20 7 enzyme   | 37483.at   | HG-U95A | AB018287  | NM_014707, NP_058176, NP_478058, NM_058177 | NP_055522, NP_478057, NP_478058 | HDAC9       | 7p21-p15      | 4.1   | 3.1   |       |       | 3.7   | 26.1 histone deacetylase 7B isoform; HDAC9, HDAC9a                            | EMBO J. 18:5085-5098 (1999)   | 44, 45, 46, 567, 568, 569             |                                 |                                 |
| 21 7 enzyme   | 38121.at   | HG-U95A | X59892    | NM_004184                                  | NP_004175                       | WARS        | 14q32.31      | 3.5   | 2.9   |       | 6     | 8.7   | tryptophanyl-tRNA synthetase  | Proc. Natl. Acad. Sci. U.S.A. 86:11520-11524 (1989)                                   | 47                                    | 570                             |                                 |
| 22 7 enzyme   | 38178.at   | HG-U95A | L40802    | NM_002153                                  | NP_002144                       | HSD17B2     | 16q24.1-q24.2 |       |       | 3.1   |       |       | 3.5   | 17-beta-hydroxysteroid dehydrogenase (17b-HSD) gene                                   | J. Biol. Chem. 268:12864-12869 (1993) | 48                              | 571                             |
| 23 7 enzyme   | 38220.at   | HG-U95A | U20938    | NM_000110                                  | NP_000101                       | DPYD        | 1p22          | 2.7   | 7.5   | 2.5   | 6.9   | 3.9   | 2.1   | dihydropyrimidine dehydrogenase   | J. Clin. Invest. 81:47-51 (1988)      | 49                              | 572                             |
| 24 7 enzyme   | 38287.at   | HG-U95A | AA808961  | NM_002800                                  | NP_002791                       | PSMB9       | 6p21.3        | 3.2   | 2.3   | 2.6   | 3.1   | 2.7   | 2.4   | proteasome (prosome, macropain) subunit, beta type, 8 (large multifunctional protein) | Unpublished -- (2001)                 | 50                              | 573                             |
| 25 7 enzyme   | 38388.at   | HG-U95A | M11810    | NM_002534, NP_002525, NM_016816            | NP_002525, NP_058132            | OAS1        | 12q24.1       | 8.2   | 5.5   |       | 3.3   | 6.5   | 2'-5' oligoadenylate synthetase gene, isoform E1B, E1B                        | Proc. Natl. Acad. Sci. U.S.A. 80:4904-4908 (1983)                                     | 51, 52                                | 574, 575                        |                                 |
| 25 7 enzyme   | 38389.at   | HG-U95A | X04371    | NM_002534, NP_002525, NM_016816            | NP_002525, NP_058132            | OAS1        | 12q24.1       | 4.5   | 5.3   | 2.4   | 3.3   | 4.7   | 6   | transglutaminase 2 (C) polypeptide, protein-gutamine-gamma-glutamyltransferase        | J. Biol. Chem. 266:478-483 (1991)     | 53                              | 576                             |
| 26 7 enzyme   | 38404.at   | HG-U95A | M55153    | NM_004613                                  | NP_004604                       | TGM2        | 20q12         | 8.5   | 5     | 2.8   |       | 2.1   | 6   | transglutaminase 2 (C) polypeptide, protein-gutamine-gamma-glutamyltransferase        | J. Biol. Chem. 266:478-483 (1991)     | 53                              | 576                             |
| 27 7 enzyme   | 39263.at   | HG-U95A | M87434    | NM_002535                                  | NP_002526                       | OAS2        | 12q24.2       | 5     | 2.8   |       |       | 3.5   | 2'-5' oligoadenylate synthetase 2, isoform p89                                | J. Biol. Chem. 1992 May 15267(14):2833-9  | 54                                    | 577                             |                                 |
| 28 7 enzyme   | 39425.at   | HG-U95A | X81247    | NM_003330                                  | NP_003321                       | TNFRD1      | 12q23-q24.1   | 2     |       | 2.5   |       |       | 3.3   | thioredoxin reductase 1   | FEBS Lett. 373:5-8 (1995)             | 55                              | 578                             |
| 28 7 enzyme   | 40505.at   | HG-U95A | AA883502  | NM_004223                                  | NP_004214                       | UBE2L6      | 11q12         | 3.3   | 4.2   | 5.1   |       | 2.1   | ubiquitin-conjugating enzyme E2L 6  | J. Biol. Chem. 272:13548-13554 (1997)   | 56                                    | 579                             |                                 |
| 30 7 enzyme   | 41352.at   | HG-U95A | X62822    | NM_003032                                  | NP_003023                       | SIAT1       | 3q27-q28      | 4.7   | 13.1  | 8.7   | 21.6  | 3.9   | 2.4   | sialyltransferase 1 (beta-galactoside alpha-2,6-sialyltransferase)                    | Nucleic Acids Res 18:667 (1990)       | 57                              | 580                             |
| 31 7 enzyme   | 41558_s.at | HG-U95A | AF016388  | NM_005114                                  | NP_005105                       | HCS3T1      | 4p16          | 3.4   | 2.2   | 3.8   | 3.7   | 5.8   | 2.5   | heparan sulfate D-glucosaminyl 3-O-sulfotransferase 1 precursor                       | J. Biol. Chem. 270:11267-11275 (1995) | 58                              | 581                             |
| 32 7 enzyme   | 508.at     | HG-U95A | M14660    | NM_002654                                  | NP_116053                       | FUT10       | 8p12          | 5.8   |       | 4     |       | 8.9   |   | putative alpha 1,3-fucosyl transferase  | Unpublished -- (2002)                 | 59                              | 582                             |

Table 5

| Cat. tag | Probe ID               | Chip     | Accession | RefSeq   | Gene symbol | Map location  | lot 1        |       |       | lot 2 |       |       | Title   | Reference                        | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|------------------------|----------|-----------|----------|-------------|---------------|--------------|-------|-------|-------|-------|-------|---|----------------------------------|------------------------------|------------------------------|
|          |                        |          |           |          |             |               | Day 1        | Day 2 | Day 3 | Day 1 | Day 2 | Day 3 |   |                                  |                              |                              |
| 33       | 8 hypothetical protein | 33787.at | HG-U95A   | AB011109 | NP_053655   | KIAA0537      | 12q24.11     | 7.5   | 5.6   | 8.8   | 3.3   | 4.8   | 4.8 KIAA0537 gene product                     | DNA Res. 5 (1), 31-39 (1998)     | 60                           | 582                          |
| 34       | 8 hypothetical protein | 34714.at | HG-U95A   | AL050287 | NP_056289   | SAMHD1        | 20pter-q12   | 2.4   |       | 4.3   | 2.3   | 2.7   | DNFZP564A032 protein                          | Immunol. Lett. 74:221-224 (2000) | 61                           | 584                          |
| 35       | 8 hypothetical protein | 36070.at | HG-U95A   | AL049389 |             | KIAA1199      | 15q          | 5.7   |       | 4.3   | 2.3   | 2.7   | 3.4 KIAA1199                                  | Unpublished -- (1998)            | 62                           | 585                          |
| 36       | 8 hypothetical protein | 36827.at | HG-U95A   | AB000115 | NP_008811   | GS3888        | 1p22.3       | 5.7   |       |       |       | 6.4   | hypothetical protein, expressed in osteoblast | Unpublished -- (1998)            | 63                           | 585                          |
| 37       | 8 hypothetical protein | 37230.at | HG-U95A   | AB007838 | NP_055668   | KIAA0468      | 1p36.23      |       |       | 2     | 2.4   |       | 3 KIAA0468 gene product                       | DNA Res. 4:345-349 (1997)        | 64                           | 586                          |
| 38       | 8 hypothetical protein | 37784.at | HG-U95A   | AL049227 |             |               | 6.4          |       |       | 6     | 6     | 5     | 7.8 DNFZP564A0823 protein                     | Unpublished -- (1999)            | 65                           | 587                          |
| 39       | 8 hypothetical protein | 41402.at | HG-U95A   | AL080171 | NP_015393   | DNFZP564A0823 | 4q13.3-q21.3 | 5     | 6.7   | 3.9   | 8.6   | 5.4   | 4.8 DNFZP564A0823 protein                     | Unpublished -- (1999)            | 66                           | 587                          |

| Cat. tag | Probe ID                       | Chip      | Accession | RefSeq   | Gene symbol | Map location | lot 1     |       |       | lot 2 |       |       | Title  | Reference  | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|--------------------------------|-----------|-----------|----------|-------------|--------------|-----------|-------|-------|-------|-------|-------|--|--|------------------------------|------------------------------|
|          |                                |           |           |          |             |              | Day 1     | Day 2 | Day 3 | Day 1 | Day 2 | Day 3 |  |  |                              |                              |
| 40       | 9 interferon-inducible protein | 1107_s.at | HG-U95A   | M13755   | NP_005092   | ISG15        | 1p36.33   | 13.1  | 8.2   | 3     | 3.8   | 8.8   | 4.3 interferon-stimulated protein, 15 kDa                            | J Biol Chem 1986 Jul 526(1):28811-6                    | 67                           | 588                          |
| 40       | 9 interferon-inducible protein | 38432.at  | HG-U95A   | AA020213 | NP_005092   | ISG15        | 1p36.33   | 22.7  | 21.9  |       | 5     | 12.6  | 8.9 interferon-stimulated protein, 15 kDa                            | J Biol Chem 1986 Jul 526(1):28811-6                    | 67                           | 588                          |
| 41       | 9 interferon-inducible protein | 32814.at  | HG-U95A   | M24594   | NP_001539   | IFT1         | 10q25-q26 | 10.6  | 7.6   |       |       | 4     | interferon-induced protein with tetratricopeptide repeats 1          | Eur. J. Biochem. 155:11-17 (1986)                      | 68                           | 589                          |
| 41       | 9 interferon-inducible protein | 915.at    | HG-U95A   | M24594   | NP_001539   | IFT1         | 10q25-q26 | 18.2  | 9.9   | 2.1   | 9     | 7.7   | interferon-induced protein with tetratricopeptide repeats 1          | Eur. J. Biochem. 155:11-17 (1986)                      | 68                           | 589                          |
| 42       | 9 interferon-inducible protein | 33304.at  | HG-U95A   | U88964   | NP_002192   | ISG20        | 15q26     | 4.8   | 2.4   |       | 4.2   | 3.3   | interferon stimulated gene (28kD)                                    | Cytogenet. Cell Genet. 79:3-4 (1997)                   | 69                           | 590                          |
| 43       | 9 interferon-inducible protein | 38549.at  | HG-U95A   | AF026941 | NP_042388   | cig5         | 2p25.3    | 10.1  |       | 2.2   | 14.3  | 7.4   | viprin (cig5) mRNA   | Unpublished -- (2001)                                  | 70                           | 591                          |
| 44       | 9 interferon-inducible protein | 38584.at  | HG-U95A   | AF026939 | NP_001549   | IFT4         | 10q24     | 2.7   | 10.4  | 4.6   | 3.4   | 10.3  | 3 interferon-induced protein with tetratricopeptide repeats 4        | Proc. Natl. Acad. Sci. U.S.A. 94:7406-7411 (1997)      | 71                           | 592                          |
| 45       | 9 interferon-inducible protein | 40322.at  | HG-U95A   | D12763   | NP_003847   | ILRL1        | 2q12      | 5.5   | 2.6   |       |       | 9.8   | interleukin 1 receptor-like 1 (NM_016232 analysis)                   | Biochim. Biophys. Acta. 1171:215-218 (1992)            | 72                           | 593                          |
| 46       | 9 interferon-inducible protein | 425.at    | HG-U95A   | X67325   | NP_005523   | IFT27        | 14q32     | 3.8   | 4.5   | 2.1   | 2.8   | 2.5   | 4.7 interferon, alpha-inducible protein 27                           | Cancer Res 1983 Sep 1:53(17):4096-101                  | 74                           | 595                          |
| 47       | 9 interferon-inducible protein | 484_s.at  | HG-U95A   | U72882   | NP_005532   | IFT35        | 17q21     | 13.2  | 9.6   |       | 4.6   | 4.5   | interferon, alpha-inducible protein 35                               | Biochim. Biophys. Res. Commun. 229 (1), 316-322 (1998) | 75                           | 596                          |
| 48       | 9 interferon-inducible protein | 675.at    | HG-U95A   | J04164   | NP_003841   | IFTM1        |           | 11    | 10.7  | 19.8  | 8.1   | 3.6   | 4 interferon-induced transmembrane protein 1 (9-27)                  | Eur. J. Biochem. 153:387-371 (1985)                    | 76                           | 597                          |
| 49       | 9 interferon-inducible protein | 1359_s.at | HG-U95A   | U22870   | NP_002023   | GIP3         | 1p35      | 7.1   | 7.1   | 2.9   |       |       | 10.8 interferon, alpha-inducible protein (clone IF-6-16) isoform a-c | Cell 38:745-755 (1984)                                 | 77                           | 598                          |
| 50       | 9 interferon-inducible protein | 37641.at  | HG-U95A   | D28915   | NP_006408   | IFT44        | 1p31.1    | 5.9   | 8     |       | 2.3   | 3.8   | interferon-induced protein 44  | Unpublished -- (2002)                                  | 80                           | 601                          |
| 51       | 9 interferon-inducible protein | 39728.at  | HG-U95A   | J03909   | NP_006332   | IFT30        | 18p13.1   |       |       | 2.1   |       |       | 2.3 interferon, gamma-inducible protein 30                           | J Biol Chem 1988 Aug 255:26324:12038-43                | 81                           | 602                          |

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Table 7

| Cat. category tag |               | Probe ID   | Chip    | accession | RefSeq    | gene symbol | map location | Set 1 |       |      | Set 2 |       |       | SEQ ID NO. (nucleotide seq.) | SEQ ID NO. (amino acid seq.) |       |
|-------------------|---------------|------------|---------|-----------|-----------|-------------|--------------|-------|-------|------|-------|-------|-------|------------------------------|------------------------------|-------|
|                   |               |            |         |           |           |             |              | Day 3 | Day 7 | AI   | Day 3 | Day 7 | AI    |                              |                              |       |
| 67                | 13 metabolism | 32383_at   | HG-U95A | AF059214  | NM_003956 | CH25H       | 10q23        | 8.9   | 8.9   | 15.1 | 11.4  | 14.9  | 12    | cholesterol 25-hydroxylase   | 68                           |       |
|                   |               |            |         |           |           |             |              | 47.8  | 69.2  | 72.3 | 118.8 | 112.2 | 322.1 | 322.1                        | 322.1                        | 322.1 |
| 68                | 13 metabolism | 34636_at   | HG-U95A | M23882    | NM_001140 | ALOX15      | 17p13.3      | 47.8  | 69.2  | 72.3 | 118.8 | 112.2 | 322.1 | 322.1                        | 322.1                        | 322.1 |
|                   |               |            |         |           |           |             |              | 47.8  | 69.2  | 72.3 | 118.8 | 112.2 | 322.1 | 322.1                        | 322.1                        | 322.1 |
| 69                | 13 metabolism | 35017_f.at | HG-U95A | M80469    | NM_012399 | PITPNB      | 22q12.1      | 2.3   | 2.3   | 2.3  | 2.3   | 2.3   | 2.3   | 2.3                          | 2.3                          | 2.3   |
|                   |               |            |         |           |           |             |              | 2.3   | 2.3   | 2.3  | 2.3   | 2.3   | 2.3   | 2.3                          | 2.3                          | 2.3   |
| 69                | 13 metabolism | 3533_at    | HG-U95A | D30037    | NM_012399 | PITPNB      | 22q12.1      | 2.6   | 2.6   | 2.6  | 2.6   | 2.6   | 2.6   | 2.6                          | 2.6                          | 2.6   |
|                   |               |            |         |           |           |             |              | 2.6   | 2.6   | 2.6  | 2.6   | 2.6   | 2.6   | 2.6                          | 2.6                          | 2.6   |

| Cat. category tag |        | Probe ID   | Chip    | accession | RefSeq    | gene symbol | map location | Set 1 |       |     | Set 2 |       |     | SEQ ID NO. (nucleotide seq.) | SEQ ID NO. (amino acid seq.) |     |
|-------------------|--------|------------|---------|-----------|-----------|-------------|--------------|-------|-------|-----|-------|-------|-----|------------------------------|------------------------------|-----|
|                   |        |            |         |           |           |             |              | Day 3 | Day 7 | AI  | Day 3 | Day 7 | AI  |                              |                              |     |
| 70                | 14 MHC | 34427_at   | HG-U95A | U22683    | NM_001531 | HLA-S       | 1q25.3       | 2     | 2     | 2   | 2     | 2     | 2   | 2                            | 2                            | 2   |
|                   |        |            |         |           |           |             |              | 2     | 2     | 2   | 2     | 2     | 2   | 2                            | 2                            | 2   |
| 71                | 14 MHC | 35937_at   | HG-U95A | U65416    | NM_005931 | MICB        | 6p21.3       | 3.3   | 3.3   | 3.3 | 3.3   | 3.3   | 3.3 | 3.3                          | 3.3                          | 3.3 |
|                   |        |            |         |           |           |             |              | 3.3   | 3.3   | 3.3 | 3.3   | 3.3   | 3.3 | 3.3                          | 3.3                          | 3.3 |
| 72                | 14 MHC | 37420_at   | HG-U95A | AL022723  | NM_018950 | HLA-F       | 6p21.3       | 2.8   | 3     | 3.3 | 2.4   | 2.8   | 2.8 | 2.8                          | 2.8                          | 2.8 |
|                   |        |            |         |           |           |             |              | 2.8   | 3     | 3.3 | 2.4   | 2.8   | 2.8 | 2.8                          | 2.8                          | 2.8 |
| 72                | 14 MHC | 37421_f.at | HG-U95A | AL022723  | NM_018950 | HLA-F       | 6p21.3       | 2.4   | 2.4   | 2.4 | 2.4   | 2.4   | 2.4 | 2.4                          | 2.4                          | 2.4 |
|                   |        |            |         |           |           |             |              | 2.4   | 2.4   | 2.4 | 2.4   | 2.4   | 2.4 | 2.4                          | 2.4                          | 2.4 |

| Cat. category tag |                | Probe ID | Chip    | accession | RefSeq    | gene symbol | map location | Set 1 |       |     | Set 2 |       |     | SEQ ID NO. (nucleotide seq.) | SEQ ID NO. (amino acid seq.) |     |
|-------------------|----------------|----------|---------|-----------|-----------|-------------|--------------|-------|-------|-----|-------|-------|-----|------------------------------|------------------------------|-----|
|                   |                |          |         |           |           |             |              | Day 3 | Day 7 | AI  | Day 3 | Day 7 | AI  |                              |                              |     |
| 73                | 15 MMP related | 34839_at | HG-U95A | AB028027  | NM_014889 | NP_055704   | 10p15.2      | 2     | 2     | 2   | 2     | 2     | 2   | 2                            | 2                            | 2   |
|                   |                |          |         |           |           |             |              | 2     | 2     | 2   | 2     | 2     | 2   | 2                            | 2                            | 2   |
| 74                | 15 MMP related | 35470_at | HG-U95A | AJ242015  | NM_014285 | NP_055800   | 8p21.1       | 6     | 4.8   | 5   | 6.4   | 3.5   | 3.7 | 3.7                          | 3.7                          | 3.7 |
|                   |                |          |         |           |           |             |              | 6     | 4.8   | 5   | 6.4   | 3.5   | 3.7 | 3.7                          | 3.7                          | 3.7 |
| 75                | 15 MMP related | 40712_at | HG-U95A | D26579    | NM_001109 | NP_001100   | 10q26.3      | 5.8   | 5.1   | 2.8 | 2.7   | 4.5   | 4.5 | 4.5                          | 4.5                          | 4.5 |
|                   |                |          |         |           |           |             |              | 5.8   | 5.1   | 2.8 | 2.7   | 4.5   | 4.5 | 4.5                          | 4.5                          | 4.5 |
| 76                | 15 MMP related | 608_s.at | HG-U95A | L22524    | NM_002414 | MMP7        | 11q21-q22    | 2.6   | 2.2   | 2.8 | 2.8   | 3.4   | 2   | 2                            | 2                            | 2   |
|                   |                |          |         |           |           |             |              | 2.6   | 2.2   | 2.8 | 2.8   | 3.4   | 2   | 2                            | 2                            | 2   |

| Cat. category tag |                | Probe ID | Chip    | accession | RefSeq    | gene symbol | map location | Set 1 |       |     | Set 2 |       |     | SEQ ID NO. (nucleotide seq.) | SEQ ID NO. (amino acid seq.) |     |
|-------------------|----------------|----------|---------|-----------|-----------|-------------|--------------|-------|-------|-----|-------|-------|-----|------------------------------|------------------------------|-----|
|                   |                |          |         |           |           |             |              | Day 3 | Day 7 | AI  | Day 3 | Day 7 | AI  |                              |                              |     |
| 77                | 16 oncogenesis | 40292_at | HG-U95A | AF027334  | NM_014618 | NP_054343   | 9q32-q33     | 3.1   | 3.1   | 3.1 | 3.1   | 3.1   | 3.1 | 3.1                          | 3.1                          | 3.1 |
|                   |                |          |         |           |           |             |              | 3.1   | 3.1   | 3.1 | 3.1   | 3.1   | 3.1 | 3.1                          | 3.1                          | 3.1 |

Table 8

| Cat. tag | category  | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |     | lot 2 |       |     | title   | reference                              | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|-----------|----------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|-----|-------|-------|-----|---|--|------------------------------|------------------------------|
|          |           |          |         |           |           |           |             |              | Day 3 | Day 7 | AI  | Day 3 | Day 7 | AI  |   |  |                              |                              |
| 76       | 17 others | 34484_at | HG-U95A | AB81869   | NM_006420 | NP_006411 | BIG2        | 20q13.13     |       |       |     |       |       |     | 2.9 ADP-ribosylation factor exchange factor 2 | J. Biol. Chem. 274:12300-12315 (1999)  | 112                          | 633                          |
| 78       | 17 others | 38430_at | HG-U95A | AA128249  | NM_001442 | NP_001433 | FABP4       | 8q21         | 3.8   | 2.8   |     | 2.5   |       |     | 2.5 fatty acid binding protein 4, cytosolic   | Biochemistry 28 (22), 8535-8550 (1989) | 113                          | 634                          |
| 80       | 17 others | 38812_at | HG-U95A | AB9023    | NM_005724 | NP_005715 | TSPAN-3     | 15q23        | 2.2   | 2.5   | 2.7 | 3.2   | 2.5   | 2.7 | 2.7 tetraspan 3                               | J. Biol. Chem. 266:17566-17572 (1991)  | 114                          | 635                          |
| 81       | 17 others | 39420_at | HG-U95A | AB9138    | NM_004083 | NP_004074 | DDIT3       | 12q13.1-     | 2.3   | 5.2   |     |       |       |     | 29.5 DNA-damage-inducible transcript 3        | Gene 116:259-267 (1992)                | 115                          | 636                          |
| 82       | 17 others | 39959_at | HG-U95A | AL031883  | NM_006338 | NP_006339 | diaphanin   | 8p21.3       | 21.3  | 14.4  | 4.3 | 9.7   | 16.3  |     | diaphanin                                     | Immunogenetics 44:97-103 (1995)        | 116                          | 637                          |
| 83       | 17 others | 40456_at | HG-U95A | AL048963  | NM_022154 | NP_071437 | LOC64116    | 4q22-q24     | 2.2   | 2.9   | 2.8 |       | 5.6   |     | 3 up-regulated by BCG-OHS                     | Unpublished                            | 117                          | 638                          |
| 84       | 17 others | 34759_at | HG-U95A | U68484    |           |           |             |              |       |       | 2.5 |       |       |     | 2.9 Human huc647 mRNA sequence                | Hum. Mol. Genet. 2:1793-1798 (1993)    | 118                          | -                            |

| Cat. tag | category       | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location  | lot 1 |       |    | lot 2 |       |    | title   | reference                              | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|----------------|----------|---------|-----------|-----------|-----------|-------------|---------------|-------|-------|----|-------|-------|----|---|--|------------------------------|------------------------------|
|          |                |          |         |           |           |           |             |               | Day 3 | Day 7 | AI | Day 3 | Day 7 | AI |   |  |                              |                              |
| 85       | 19 phosphatase | 38272_at | HG-U95A | AF038844  | NM_007026 | NP_058807 | MKP-L       | 17q12         | 2     | 2.9   |    | 2.5   |       |    | 5.1 MKP-L like protein                              | J. Biol. Chem. 273:23722-23728 (1998)  | 119                          | 639                          |
| 86       | 19 phosphatase | 677_s.at | HG-U95A | U04430    | NM_001611 | NP_001602 | ACP5        | 19p13.3-p13.2 | -2.9  |       |    | 2.5   |       |    | 2.8 tartrate resistant acid phosphatase 5 precursor | J. Biol. Chem. 264 (1), 557-563 (1989) | 120                          | 640                          |

| Cat. tag | category                   | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |     | lot 2 |       |      | title               | reference                 | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|----------------------------|----------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|-----|-------|-------|------|---------------------|---------------------------|------------------------------|------------------------------|
|          |                            |          |         |           |           |           |             |              | Day 3 | Day 7 | AI  | Day 3 | Day 7 | AI   |                     |                           |                              |                              |
| 87       | 20 protein binding protein | 41592_at | HG-U95A | AB000734  | NM_003745 | NP_003736 | SSI-1       | 16p13.13     | 5.6   | 5.8   | 6.1 | 8.3   | 15.5  | 11.3 | JAK binding protein | Nature 387:921-924 (1997) | 121                          | 641                          |

| Cat. tag | category      | Probe ID   | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |     | lot 2 |       |     | title                                      | reference                            | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|---------------|------------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|-----|-------|-------|-----|--|--------------------------------------|------------------------------|------------------------------|
|          |               |            |         |           |           |           |             |              | Day 3 | Day 7 | AI  | Day 3 | Day 7 | AI  |  |                                      |                              |                              |
| 88       | 21 proteinase | 133_at     | HG-U95A | X87212    | NM_001814 | NP_001805 | GTSC        | 11q14.1-     | 3.5   | 4.7   | 2.8 | 5.6   | 3.9   | 2.2 | cathepsin C                                | FEBS Lett. 389 (2-3), 326-330 (1995) | 122                          | 642                          |
| 89       | 21 proteinase | 34702_f.at | HG-U95A | M27826    | AAAG6389  | HUMRTVLH3 |             | q14.3        |       | 6.1   | 7   |       |       |     | 3.1 endogenous retroviral protease         | Gene 75: 259-267 (1990)              | 123                          | 643                          |
| 90       | 21 proteinase | 40466_at   | HG-U95A | J04080    | NM_001734 | NP_001725 | C15         | 12p13        | 3.3   | 4.8   |     |       |       |     | 4.1 complement component 1, a subcomponent | Eur. J. Biochem. 165:547-553 (1987)  | 124                          | 644                          |
| 91       | 21 proteinase | 811_at     | HG-U95A | U04444    | NM_005659 | NP_005650 | UPD1L       | 22q11.21     | 2.3   | 2.3   | 5.1 | 3.8   | 3.1   | 3.2 | ubiquitin fusion degradation 1-like        | Hum. Mol. Genet. 6:259-265 (1997)    | 125                          | 645                          |

Table 9

| Cat. tag | category | Probe ID           | Chip       | accession | RefSeq   | RefSeq    | gene symbol | map location | lot 1 |       |     |      | lot 2 |       |     |    | title  | reference   | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|----------|--------------------|------------|-----------|----------|-----------|-------------|--------------|-------|-------|-----|------|-------|-------|-----|----|--|---|------------------------------|------------------------------|
|          |          |                    |            |           |          |           |             |              | Day 3 | Day 7 | IMM | AI   | Day 3 | Day 7 | IMM | AI |  |   |                              |                              |
| 82       | 22       | protease inhibitor | 1548_s.at  | HG-U95A   | U19557   | XM_036951 | XP_036951   | 18q21.3      | 4.2   | 67.4  | 7.8 | 23.9 | 9.6   |       |     |    | 15 serine (or cysteine) proteinase inhibitor, c. ade B (ovalbumin), member 4 | Proc Natl Acad Sci U S A 1995 Apr 11;92(8):3147-51. | 126                          | 646                          |
| 83       | 22       | protease inhibitor | 32620_at   | HG-U95A   | AB017551 | NM_014375 | NP_055190   | 3q27         | 3.7   | 4.1   | 8.4 | 7.4  | 37.6  |       |     |    | fetuin B   | Biochem. J. 350:589-597 (2000)                      | 127                          | 647                          |
| 83       | 22       | protease inhibitor | 33101_s.at | HG-U95A   | AB017551 | NM_014375 | NP_055190   | 3q27         | 2.2   |       |     | 8    | 7.7   | 24.7  |     |    | fetuin B   |   | 127                          | 647                          |
| 84       | 22       | protease inhibitor | 34769_at   | HG-U95A   | S69272   | NM_004559 | SERPINF6    | 6p25         | 2.2   | 2.6   | 2   |      | 2.1   |       |     |    | serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 6     | Proc Natl Acad Sci U S A 90:9417-9421 (1993)        | 128                          | 648                          |
| 85       | 22       | protease inhibitor | 37185_at   | HG-U95A   | Y00630   | NM_002575 | NP_002566   | 18q21.3      | 2.1   |       | 5.3 | 3    | 4.1   |       |     |    | 3.4 serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 2 | J Biol Chem. 262:3718-3723 (1987)                   | 129                          | 649                          |

| Cat. tag | category | Probe ID            | Chip     | accession | RefSeq   | RefSeq    | gene symbol | map location | lot 1 |       |     |      | lot 2 |       |     |    | title  | reference  | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|----------|---------------------|----------|-----------|----------|-----------|-------------|--------------|-------|-------|-----|------|-------|-------|-----|----|--|--|------------------------------|------------------------------|
|          |          |                     |          |           |          |           |             |              | Day 3 | Day 7 | IMM | AI   | Day 3 | Day 7 | IMM | AI |  |  |                              |                              |
| 96       | 24       | signal transduction | 32005_at | HG-U95A   | M57703   | NM_002674 | NP_002665   | 12q23-q24    |       | 3.2   | 11  |      | 12.2  |       |     |    | 4.3 pro-melanin-concentrating hormone  | Mol. Endocrinol. 4:937-937 (1990)                    | 130                          | 650                          |
| 97       | 24       | signal transduction | 33291_at | HG-U95A   | AF081115 | NM_005739 | NP_005730   | 15q15        |       | 2.6   | 2.8 | 3.3  | 3.7   |       |     |    | 4.2 RAS guanyl releasing protein 1   | Proc. Natl. Acad. Sci. U.S.A. 95: 13278-13283 (1998) | 131                          | 651                          |
| 98       | 24       | signal transduction | 37014_at | HG-U95A   | M33692   | NM_002462 | NP_002453   | 21q22.3      | 12.3  | 10.6  | 2.9 | 11.2 | 11.4  |       |     |    | 4.2 myxovirus (influenza virus) resistance 1, interferon-inducible protein p78 (mouse) | Mol. Cell. Biol. 9 (11), 5062-5072 (1989)            | 132                          | 652                          |
| 99       | 24       | signal transduction | 37890_at | HG-U95A   | X63398   | NM_001777 | NP_001768   | 3q13.1-q13.2 | 2.1   |       |     |      | 2.4   |       |     |    | CD47 antigen (Rb-related antigen, integrin-associated signal transducer)               |  | 133                          | 653                          |
| 100      | 24       | signal transduction | 626_s.at | HG-U95A   | L78833   |           | AAC37594    | BRCA1        | 17q21 | 9.1   | 7.6 | 2.4  | 19.3  |       |     |    | BRCA1, Rho7 and vavl genes   | Genome Res. 6, 1025-1046 (1996)                      | 134                          | 654                          |
| 101      | 24       | signal transduction | 879_at   | HG-U95A   | M30818   | NM_002463 | NP_002454   | 21q22.3      | 8.7   | 8     |     | 2.4  | 6.9   |       |     |    | myxovirus (influenza virus) resistance 2 (mouse)                                       | Mol. Cell. Biol. 9:5062-5072 (1989)                  | 135                          | 655                          |

| Cat. tag | category | Probe ID           | Chip     | accession | RefSeq | RefSeq    | gene symbol | map location | lot 1 |       |     |     | lot 2 |       |     |    | title                        | reference                          | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|----------|--------------------|----------|-----------|--------|-----------|-------------|--------------|-------|-------|-----|-----|-------|-------|-----|----|------------------------------|------------------------------------|------------------------------|------------------------------|
|          |          |                    |          |           |        |           |             |              | Day 3 | Day 7 | IMM | AI  | Day 3 | Day 7 | IMM | AI |                              |                                    |                              |                              |
| 102      | 25       | structural protein | 38951_at | HG-U95A   | L20826 | NM_002170 | NP_002661   | 3q24         | 2.5   | 2.9   | 5.4 | 7.9 | 3.1   |       |     |    | platin 1                     | J Biol. Chem. 268:2781-2792 (1993) | 136                          | 656                          |
| 103      | 25       | structural protein | 601_s.at | HG-U95A   | M26439 | NM_005537 | NP_005548   | 17q12-q21    |       | 4.6   | 3.6 | 3.5 | 5.2   |       |     |    | keratin type 16 gene, exon 8 | Mol. Cell. Biol. 6:539-548 (1986)  | 137                          | 657                          |



Table 10

| Cat. category               | Probe ID   | Chip    | accession | RefSeq    | RefSeq    | map location | lot 1    |       |       | lot 2 |       |       | reference                            | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|-----------------------------|------------|---------|-----------|-----------|-----------|--------------|----------|-------|-------|-------|-------|-------|--------------------------------------|---------------------------------|---------------------------------|
|                             |            |         |           |           |           |              | Day 3    | Day 7 | Day 7 | Day 3 | Day 7 | Day 7 |                                      |                                 |                                 |
| 104 26 transcription factor | 32859_at   | HG-U95A | M97935    | NM_007315 | NP_009330 | STAT1        | AI       | IMM   | AI    | IMM   | AI    | AI    |                                      | 138                             | 658                             |
| 104 26 transcription factor | 32860_at   | HG-U95A | M97935    | NM_007315 | NP_009330 | STAT1        | 2.8      | 2.4   | 2.1   | 2.1   | 2.1   | 2.1   | Proc Natl Acad Sci U S A.            | 138                             | 658                             |
| 104 26 transcription factor | 33338_at   | HG-U95A | M97938    | NM_007315 | NP_009330 | STAT1        | 2.8      | 2.4   | 2.1   | 2.1   | 2.1   | 2.1   | Proc Natl Acad Sci U S A.            | 138                             | 658                             |
| 104 26 transcription factor | 33339_at   | HG-U95A | M97938    | NM_007315 | NP_009330 | STAT1        | 2.8      | 2.4   | 2.1   | 2.1   | 2.1   | 2.1   | Proc Natl Acad Sci U S A.            | 138                             | 658                             |
| 104 26 transcription factor | 32861_at   | HG-U95A | X83417    | XM_050909 | XP_050909 | RRLB         | 2.8      | 2.4   | 2.1   | 2.1   | 2.1   | 2.1   | Unpublished - (2002)                 | 138                             | 658                             |
| 106 26 transcription factor | 33288_j.at | HG-U95A | D88827    | NM_005741 | NP_005732 | ZNF263       | 1.6p13.3 | 2.6   | 2.6   | 2.6   | 2.6   | 2.6   | Unpublished - (1996)                 | 140                             | 663                             |
| 107 26 transcription factor | 35432_at   | HG-U95A | AF074123  | NM_005468 | NP_005467 | MEIO6        | 14q24.1  | 2.7   | 2.7   | 2.7   | 2.7   | 2.7   | Med. Cell. Biol. 7:4622-4632 (1997)  | 141                             | 661                             |
| 108 26 transcription factor | 38412_s.at | HG-U95A | U53931    | NM_001572 | NP_001553 | RF7          | 11p15.5  | 4.8   | 2.5   | 3.4   | 3.4   | 3.4   | Med. Cell. Biol. 7:5748-5757 (1997)  | 142, 143, 144, 145              | 662, 663, 664, 665              |
| 109 26 transcription factor | 37544_at   | HG-U95A | X04318    | NM_005384 | NP_005375 | NFL3         | 9q22     |       | 2.5   | 2.5   | 2.5   | 2.5   | Med. Cell. Biol. 12:3070-3077 (1992) | 146                             | 666                             |

| Cat. category      | Probe ID | Chip    | accession | RefSeq    | RefSeq    | map location | lot 1 |       |       | lot 2 |       |       | reference                           | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|--------------------|----------|---------|-----------|-----------|-----------|--------------|-------|-------|-------|-------|-------|-------|-------------------------------------|---------------------------------|---------------------------------|
|                    |          |         |           |           |           |              | Day 3 | Day 7 | Day 7 | Day 3 | Day 7 | Day 7 |                                     |                                 |                                 |
| 110 27 transporter | 36376_at | HG-U95A | AF008880  | NM_000441 | NP_000432 | SLC26A4      | 7q31  | 18.8  | 25.6  | 20.1  | 28.5  | 118.3 | Hum. Mol. Genet. 4:1637-1642 (1995) | 147                             | 667                             |
| 111 27 transporter | 41038_at | HG-U95A | M32011    | NM_000433 | NP_000424 | NGF2         | 1q25  | 2.9   | 4     | 4     | 4.4   | 4.2   | Neutrophil cytosolic factor (1990)  | 148                             | 668                             |

Table 11

| Cat. category tag | Probe ID        | Chip     | accession        | RefSeq    | RefSeq    | gene symbol | map location   | lot 1 |       |       |       | lot 2 |       |       |       | SEQ ID NO. (nucleotide seq.) | SEQ ID NO. (amino acid seq.) |     |
|-------------------|-----------------|----------|------------------|-----------|-----------|-------------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|------------------------------|------------------------------|-----|
|                   |                 |          |                  |           |           |             |                | Day 3 | Day 7 | Day 3 | Day 7 | Day 3 | Day 7 | Day 3 | Day 7 |                              |                              |     |
| 1                 | 2 cell adhesion | 48916_at | HG-U95B AA154985 | NM_021810 | NP_068582 | CDH26       | 20q13.2-q13.33 | AI    | IMM   | AI    | IMM   | AI    | IMM   | AI    | IMM   | reference                    | 149                          | 669 |
| 2                 | 2 cell adhesion | 57421_at | HG-U95B AB28108  | NM_004932 | NP_004923 | CDH6        | 5p15.1-p14     | AI    | IMM   | AI    | IMM   | AI    | IMM   | AI    | IMM   | unpublished                  | 150                          | 670 |

| Cat. category tag | Probe ID    | Chip     | accession        | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |       |       | lot 2 |       |       |       | SEQ ID NO. (nucleotide seq.)      | SEQ ID NO. (amino acid seq.) |     |
|-------------------|-------------|----------|------------------|-----------|-----------|-------------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------------------------|------------------------------|-----|
|                   |             |          |                  |           |           |             |              | Day 3 | Day 7 | Day 3 | Day 7 | Day 3 | Day 7 | Day 3 | Day 7 |                                   |                              |     |
| 3                 | 4 chemokine | 44095_at | HG-U95B AA147076 | NM_022059 | NP_071342 | CXCL16      | 17p13        | AI    | IMM   | AI    | IMM   | AI    | IMM   | AI    | IMM   | reference                         | 151                          | 671 |
|                   |             |          |                  |           |           |             |              | 2.5   | 2.5   | 4     | 2.5   | 2.3   | 2.3   | 2.3   | 2.3   | chemokine (C-X-C motif) ligand 16 |                              | 672 |

| Cat. category tag | Probe ID           | Chip     | accession        | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |       |       | lot 2 |       |       |       | SEQ ID NO. (nucleotide seq.) | SEQ ID NO. (amino acid seq.) |     |
|-------------------|--------------------|----------|------------------|-----------|-----------|-------------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|------------------------------|------------------------------|-----|
|                   |                    |          |                  |           |           |             |              | Day 3 | Day 7 | Day 3 | Day 7 | Day 3 | Day 7 | Day 3 | Day 7 |                              |                              |     |
| 4                 | 5 cytokine related | 47855_at | HG-U95B AA151856 | NM_013371 | NP_037503 | IL19        | 1q32.2       | AI    | IMM   | AI    | IMM   | AI    | IMM   | AI    | IMM   | reference                    | 152                          | 672 |
|                   |                    |          |                  |           |           |             |              | 4     | 9.1   | 2.6   | 10.9  |       |       |       |       | Unpublished -- 0             |                              | 673 |

| Cat. category tag | Probe ID            | Chip     | accession        | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |       |       | lot 2 |       |       |       | SEQ ID NO. (nucleotide seq.)                                | SEQ ID NO. (amino acid seq.) |     |
|-------------------|---------------------|----------|------------------|-----------|-----------|-------------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|---|------------------------------|-----|
|                   |                     |          |                  |           |           |             |              | Day 3 | Day 7 | Day 3 | Day 7 | Day 3 | Day 7 | Day 3 | Day 7 |   |                              |     |
| 5                 | 6 cytosolic protein | 47634_at | HG-U95B AW052044 | NM_005347 | NP_005338 | HSPA5       | 9q33-q34.1   | AI    | IMM   | AI    | IMM   | AI    | IMM   | AI    | IMM   | reference   | 153                          | 673 |
|                   |                     |          |                  |           |           |             |              |       | 2.7   |       | 3.7   |       |       |       |       | -   |                              | 674 |
|                   |                     |          |                  |           |           |             |              |       |       |       |       |       |       |       |       | heat shock 70kD protein 5 (glucose-regulated protein, 78kD) |                              | 675 |

| Cat. category tag | Probe ID | Chip       | accession        | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |       |       | lot 2 |       |       |       | SEQ ID NO. (nucleotide seq.)  | SEQ ID NO. (amino acid seq.) |     |
|-------------------|----------|------------|------------------|-----------|-----------|-------------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|---|------------------------------|-----|
|                   |          |            |                  |           |           |             |              | Day 3 | Day 7 | Day 3 | Day 7 | Day 3 | Day 7 | Day 3 | Day 7 |   |                              |     |
| 6                 | 7 enzyme | 43394_s.at | HG-U95B AW003365 | NM_021127 | NP_068373 | FADS3       | 11q12-q13.1  | AI    | IMM   | AI    | IMM   | AI    | IMM   | AI    | IMM   | reference   | 154                          | 674 |
| 7                 | 7 enzyme | 48918_at   | HG-U95B AA432381 | NM_000925 | NP_000916 | NOS2A       | 17q11.2-q12  | AI    | IMM   | AI    | IMM   | AI    | IMM   | AI    | IMM   | Proc Natl Acad Sci U.S.A. 90:3491-3495 (1993)   | 155                          | 675 |
| 8                 | 7 enzyme | 51920_at   | HG-U95B AA134956 | NM_022168 | NP_071451 | MDA5        | 2p24.3-q24.3 | AI    | IMM   | AI    | IMM   | AI    | IMM   | AI    | IMM   | Unpublished -- 0  | 156                          | 676 |
| 9                 | 7 enzyme | 54604_at   | HG-U95B AC338977 | NM_005329 | NP_005320 | HAS3        | 16q22.1      | AI    | IMM   | AI    | IMM   | AI    | IMM   | AI    | IMM   | asialoglycoprotein-5  | 157                          | 677 |
|                   |          |            |                  |           |           |             |              | 2.3   |       | 2.2   | 2     |       |       |       |       | hyaluronan synthase 3   | 157                          | 677 |
| 10                | 7 enzyme | 57151_at   | HG-U95B T66196   | NM_005737 | NP_005728 | ARL7        | 2q37.2       | AI    | IMM   | AI    | IMM   | AI    | IMM   | AI    | IMM   | J. Biol. Chem. 272:8957-8961 (1997)   | 158                          | 678 |
|                   |          |            |                  |           |           |             |              | 3.2   | 3.1   | 6.1   | 5.3   |       |       |       |       | ADP-ribosylation factor-like 7  |                              | 679 |
| 11                | 7 enzyme | 59215_at   | HG-U95B AB07018  | NM_014814 | NP_055129 | RIG-I       | 9p12         | AI    | IMM   | AI    | IMM   | AI    | IMM   | AI    | IMM   | RNA helicase  | 160                          | 680 |
| 12                | 7 enzyme | 51925_at   | HG-U95B AA149682 |           |           |             |              | 7.2   | 8.7   | 2.8   | 3.8   | 11.8  |       |       |       | ESTs, Weakly similar to phosphatidylserine-specific phospholipase A1 delta C (Maspiens) | 161                          | -   |
|                   |          |            |                  |           |           |             |              | 2.9   | 2.4   |       | 2.2   |       |       |       |       |   |                              | -   |

Table 12

| col.1 |  | col.2 |  | col.3 |  | col.4 |  | col.5 |  | col.6 |  | col.7 |  | col.8 |  | col.9 |  | col.10 |  | col.11 |  | col.12 |  | col.13 |  | col.14 |  | col.15 |  | col.16 |  | col.17 |  | col.18 |  | col.19 |  | col.20 |  | col.21 |  | col.22 |  | col.23 |  | col.24 |  | col.25 |  | col.26 |  | col.27 |  | col.28 |  | col.29 |  | col.30 |  | col.31 |  | col.32 |  | col.33 |  | col.34 |  | col.35 |  | col.36 |  | col.37 |  | col.38 |  | col.39 |  | col.40 |  | col.41 |  | col.42 |  | col.43 |  | col.44 |  | col.45 |  | col.46 |  | col.47 |  | col.48 |  | col.49 |  | col.50 |  | col.51 |  | col.52 |  | col.53 |  | col.54 |  | col.55 |  | col.56 |  | col.57 |  | col.58 |  | col.59 |  | col.60 |  | col.61 |  | col.62 |  | col.63 |  | col.64 |  | col.65 |  | col.66 |  | col.67 |  | col.68 |  | col.69 |  | col.70 |  | col.71 |  | col.72 |  | col.73 |  | col.74 |  | col.75 |  | col.76 |  | col.77 |  | col.78 |  | col.79 |  | col.80 |  | col.81 |  | col.82 |  | col.83 |  | col.84 |  | col.85 |  | col.86 |  | col.87 |  | col.88 |  | col.89 |  | col.90 |  | col.91 |  | col.92 |  | col.93 |  | col.94 |  | col.95 |  | col.96 |  | col.97 |  | col.98 |  | col.99 |  | col.100 |  | col.101 |  | col.102 |  | col.103 |  | col.104 |  | col.105 |  | col.106 |  | col.107 |  | col.108 |  | col.109 |  | col.110 |  | col.111 |  | col.112 |  | col.113 |  | col.114 |  | col.115 |  | col.116 |  | col.117 |  | col.118 |  | col.119 |  | col.120 |  | col.121 |  | col.122 |  | col.123 |  | col.124 |  | col.125 |  | col.126 |  | col.127 |  | col.128 |  | col.129 |  | col.130 |  | col.131 |  | col.132 |  | col.133 |  | col.134 |  | col.135 |  | col.136 |  | col.137 |  | col.138 |  | col.139 |  | col.140 |  | col.141 |  | col.142 |  | col.143 |  | col.144 |  | col.145 |  | col.146 |  | col.147 |  | col.148 |  | col.149 |  | col.150 |  | col.151 |  | col.152 |  | col.153 |  | col.154 |  | col.155 |  | col.156 |  | col.157 |  | col.158 |  | col.159 |  | col.160 |  | col.161 |  | col.162 |  | col.163 |  | col.164 |  | col.165 |  | col.166 |  | col.167 |  | col.168 |  | col.169 |  | col.170 |  | col.171 |  | col.172 |  | col.173 |  | col.174 |  | col.175 |  | col.176 |  | col.177 |  | col.178 |  | col.179 |  | col.180 |  | col.181 |  | col.182 |  | col.183 |  | col.184 |  | col.185 |  | col.186 |  | col.187 |  | col.188 |  | col.189 |  | col.190 |  | col.191 |  | col.192 |  | col.193 |  | col.194 |  | col.195 |  | col.196 |  | col.197 |  | col.198 |  | col.199 |  | col.200 |  | col.201 |  | col.202 |  | col.203 |  | col.204 |  | col.205 |  | col.206 |  | col.207 |  | col.208 |  | col.209 |  | col.210 |  | col.211 |  | col.212 |  | col.213 |  | col.214 |  | col.215 |  | col.216 |  | col.217 |  | col.218 |  | col.219 |  | col.220 |  | col.221 |  | col.222 |  | col.223 |  | col.224 |  | col.225 |  | col.226 |  | col.227 |  | col.228 |  | col.229 |  | col.230 |  | col.231 |  | col.232 |  | col.233 |  | col.234 |  | col.235 |  | col.236 |  | col.237 |  | col.238 |  | col.239 |  | col.240 |  | col.241 |  | col.242 |  | col.243 |  | col.244 |  | col.245 |  | col.246 |  | col.247 |  | col.248 |  | col.249 |  | col.250 |  | col.251 |  | col.252 |  | col.253 |  | col.254 |  | col.255 |  | col.256 |  | col.257 |  | col.258 |  | col.259 |  | col.260 |  | col.261 |  | col.262 |  | col.263 |  | col.264 |  | col.265 |  | col.266 |  | col.267 |  | col.268 |  | col.269 |  | col.270 |  | col.271 |  | col.272 |  | col.273 |  | col.274 |  | col.275 |  | col.276 |  | col.277 |  | col.278 |  | col.279 |  | col.280 |  | col.281 |  | col.282 |  | col.283 |  | col.284 |  | col.285 |  | col.286 |  | col.287 |  | col.288 |  | col.289 |  | col.290 |  | col.291 |  | col.292 |  | col.293 |  | col.294 |  | col.295 |  | col.296 |  | col.297 |  | col.298 |  | col.299 |  | col.300 |  | col.301 |  | col.302 |  | col.303 |  | col.304 |  | col.305 |  | col.306 |  | col.307 |  | col.308 |  | col.309 |  | col.310 |  | col.311 |  | col.312 |  | col.313 |  | col.314 |  | col.315 |  | col.316 |  | col.317 |  | col.318 |  | col.319 |  | col.320 |  | col.321 |  | col.322 |  | col.323 |  | col.324 |  | col.325 |  | col.326 |  | col.327 |  | col.328 |  | col.329 |  | col.330 |  | col.331 |  | col.332 |  | col.333 |  | col.334 |  | col.335 |  | col.336 |  | col.337 |  | col.338 |  | col.339 |  | col.340 |  | col.341 |  | col.342 |  | col.343 |  | col.344 |  | col.345 |  | col.346 |  | col.347 |  | col.348 |  | col.349 |  | col.350 |  | col.351 |  | col.352 |  | col.353 |  | col.354 |  | col.355 |  | col.356 |  | col.357 |  | col.358 |  | col.359 |  | col.360 |  | col.361 |  | col.362 |  | col.363 |  | col.364 |  | col.365 |  | col.366 |  | col.367 |  | col.368 |  | col.369 |  | col.370 |  | col.371 |  | col.372 |  | col.373 |  | col.374 |  | col.375 |  | col.376 |  | col.377 |  | col.378 |  | col.379 |  | col.380 |  | col.381 |  | col.382 |  | col.383 |  | col.384 |  | col.385 |  | col.386 |  | col.387 |  | col.388 |  | col.389 |  | col.390 |  | col.391 |  | col.392 |  | col.393 |  | col.394 |  | col.395 |  | col.396 |  | col.397 |  | col.398 |  | col.399 |  | col.400 |  | col.401 |  | col.402 |  | col.403 |  | col.404 |  | col.405 |  | col.406 |  | col.407 |  | col.408 |  | col.409 |  | col.410 |  | col.411 |  | col.412 |  | col.413 |  | col.414 |  | col.415 |  | col.416 |  | col.417 |  | col.418 |  | col.419 |  | col.420 |  | col.421 |  | col.422 |  | col.423 |  | col.424 |  | col.425 |  | col.426 |  | col.427 |  | col.428 |  | col.429 |  | col.430 |  | col.431 |  | col.432 |  | col.433 |  | col.434 |  | col.435 |  | col.436 |  | col.437 |  | col.438 |  | col.439 |  | col.440 |  | col.441 |  | col.442 |  | col.443 |  | col.444 |  | col.445 |  | col.446 |  | col.447 |  | col.448 |  | col.449 |  | col.450 |  | col.451 |  | col.452 |  | col.453 |  | col.454 |  | col.455 |  | col.456 |  | col.457 |  | col.458 |  | col.459 |  | col.460 |  | col.461 |  | col.462 |  | col.463 |  | col.464 |  | col.465 |  | col.466 |  | col.467 |  | col.468 |  | col.469 |  | col.470 |  | col.471 |  | col.472 |  | col.473 |  | col.474 |  | col.475 |  | col.476 |  | col.477 |  | col.478 |  | col.479 |  | col.480 |  | col.481 |  | col.482 |  | col.483 |  | col.484 |  | col.485 |  | col.486 |  | col.487 |  | col.488 |  | col.489 |  | col.490 |  | col.491 |  | col.492 |  | col.493 |  | col.494 |  | col.495 |  | col.496 |  | col.497 |  | col.498 |  | col.499 |  | col.500 |  | col.501 |  | col.502 |  | col.503 |  | col.504 |  | col.505 |  | col.506 |  | col.507 |  | col.508 |  | col.509 |  | col.510 |  | col.511 |  | col.512 |  | col.513 |  | col.514 |  | col.515 |  | col.516 |  | col.517 |  | col.518 |  | col.519 |  | col.520 |  | col.521 |  | col.522 |  | col.523 |  | col.524 |  | col.525 |  | col.526 |  | col.527 |  | col.528 |  | col.529 |  | col.530 |  | col.531 |  | col.532 |  | col.533 |  | col.534 |  | col.535 |  | col.536 |  | col.537 |  | col.538 |  | col.539 |  | col.540 |  | col.541 |  | col.542 |  | col.543 |  | col.544 |  | col.545 |  | col.546 |  | col.547 |  | col.548 |  | col.549 |  | col.550 |  | col.551 |  | col.552 |  | col.553 |  | col.554 |  | col.555 |  | col.556 |  | col.557 |  | col.558 |  | col.559 |  | col.560 |  | col.561 |  | col.562 |  | col.563 |  | col.564 |  | col.565 |  | col.566 |  | col.567 |  | col.568 |  | col.569 |  | col.570 |  | col.571 |  | col.572 |  | col.573 |  | col.574 |  | col.575 |  | col.576 |  | col.577 |  | col.578 |  | col.579 |  | col.580 |  | col.581 |  | col.582 |  | col.583 |  | col.584 |  | col.585 |  | col.586 |  | col.587 |  | col.588 |  | col.589 |  | col.590 |  | col.591 |  | col.592 |  | col.593 |  | col.594 |  | col.595 |  | col.596 |  | col.597 |  | col.598 |  | col.599 |  | col.600 |  | col.601 |  | col.602 |  | col.603 |  | col.604 |  | col.605 |  | col.606 |  | col.607 |  | col.608 |  | col.609 |  | col.610 |  | col.611 |  | col.612 |  | col.613 |  | col.614 |  | col.615 |  | col.616 |  | col.617 |  | col.618 |  | col.619 |  | col.620 |  | col.621 |  | col.622 |  | col.623 |  | col.624 |  | col.625 |  | col.626 |  | col.627 |  | col.628 |  | col.629 |  | col.630 |  | col.631 |  | col.632 |  | col.633 |  | col.634 |  | col.635 |  | col.636 |  | col.637 |  | col.638 |  | col.639 |  | col.640 |  | col.641 |  | col.642 |  | col.643 |  | col.644 |  | col.645 |  | col.646 |  | col.647 |  | col.648 |  | col.649 |  | col.650 |  | col.651 |  | col.652 |  | col.653 |  | col.654 |  | col.655 |  | col.656 |  | col.657 |  | col.658 |  | col.659 |  | col.660 |  | col.661 |  | col.662 |  | col.663 |  | col.664 |  | col.665 |  | col.666 |  | col.667 |  | col.668 |  | col.669 |  | col.670 |  | col.671 |  | col.672 |  | col.673 |  | col.674 |  | col.675 |  | col.676 |  | col.677 |  | col.678 |  | col.679 |  | col.680 |  | col.681 |  | col.682 |  | col.683 |  | col.684 |  | col.685 |  | col.686 |  | col.687 |  | col.688 |  | col.689 |  | col.690 |  | col.691 |  | col.692 |  | col.693 |  | col.694 |  | col.695 |  | col.696 |  | col.697 |  | col.698 |  | col.699 |  | col.700 |  | col.701 |  | col.702 |  | col.703 |  | col.704 |  | col.705 |  | col.706 |  | col.707 |  | col.708 |  | col.709 |  | col.710 |  | col.711 |  | col.712 |  | col.713 |  | col.714 |  | col.715 |  | col.716 |  | col.717 |  | col.718 |  | col.719 |  | col.720 |  | col.721 |  | col.722 |  | col.723 |  | col.724 |  | col.725 |  | col.726 |  | col.727 |  | col.728 |  | col.729 |  | col.730 |  | col.731 |  | col.732 |  | col.733 |  | col.734 |  | col.735 |  | col.736 |  | col.737 |  | col.738 |  | col.739 |  | col.740 |  | col.741 |  | col.742 |  | col.743 |  | col.744 |  | col.745 |  | col.746 |  | col.747 |  | col.748 |  | col.749 |  | col.750 |  | col.751 |  | col.752 |  | col.753 |  | col.754 |  | col.755 |  | col.756 |  | col.757 |  | col.758 |  | col.759 |  | col.760 |  | col.761 |  | col.762 |  | col.763 |  | col.764 |  | col.765 |  | col.766 |  | col.767 |  | col.768 |  | col.769 |  | col.770 |  | col.771 |  | col.772 |  | col.773 |  | col.774 |  | col.775 |  | col.776 |  | col.777 |  | col.778 |  | col.779 |  | col.780 |  | col.781 |  | col.782 |  | col.783 |  | col.784 |  | col.785 |  | col.786 |  | col.787 |  | col.788 |  | col.789 |  | col.790 |  | col.791 |  | col.792 |  | col.793 |  | col.794 |  | col.795 |  | col.796 |  | col.797 |  | col.798 |  | col.799 |  | col.800 |  | col.801 |  | col.802 |  | col.803 |  | col.804 |  | col.805 |  | col.806 |  | col.807 |  | col.808 |  | col.809 |  | col.810 |  | col.811 |  | col.812 |  | col.813 |  | col.814 |  | col.815 |  | col.816 |  | col.817 |  | col.818 |  | col.819 |  | col.820 |  | col.821 |  | col.822 |  | col.823 |  | col.824 |  | col.825 |  | col.826 |  | col.827 |  | col.828 |  | col.829 |  | col.830 |  | col.831 |  | col.832 |  | col.833 |  | col.834 |  | col.835 |  | col.836 |  | col.837 |  | col.838 |  | col.839 |  | col.840 |  | col.841 |  | col.842 |  | col.843 |  | col.844 |  | col.845 |  | col.846 |  | col.847 |  | col.848 |  | col.849 |  | col.850 |  | col.851 |  | col.852 |  | col.853 |  | col.854 |  | col.855 |  | col.856 |  | col.857 |  | col.858 |  | col.859 |  | col.860 |  | col.861 |  | col.862 |  | col.863 |  | col.864 |  | col.865 |  | col.866 |  | col.867 |  | col.868 |  | col.869 |  | col.870 |  | col.871 |  | col.872 |  | col.873 |  | col.874 |  | col.875 |  | col.876 |  | col.877 |  | col.878 |  | col.879 |  | col.880 |  | col.881 |  | col.882 |  | col.883 |  | col.884 |  | col.885 |  | col.886 |  | col.887 |  | col.888 |  | col.889 |  | col.890 |  | col.891 |  | col.892 |  | col.893 |  | col.894 |  | col.895 |  | col.896 |  | col.897 |  | col.898 |  | col.899 |  | col.900 |  | col.901 |  | col.902 |  | col.903 |  | col.904 |  | col.905 |  | col.906 |  | col.907 |  | col.908 |  | col.909 |  | col.910 |  | col.911 |  | col.912 |  | col.913 |  | col.914 |  | col.915 |  | col.916 |  | col.917 |  | col.918 |  | col.919 |  | col.920 |  | col.921 |  | col.922 |  | col.923 |  | col.924 |  | col.925 |  | col.926 |  | col.927 |  | col.928 |  | col.929 |  | col.930 |  | col.931 |  | col.932 |  | col.933 |  | col.934 |  | col.935 |  | col.936 |  | col.937 |  | col.938 |  | col.939 |  | col.940 |  | col.941 |  | col.942 |  | col.943 |  | col.944 |  | col.945 |  | col.946 |  | col.947 |  | col.948 |  | col.949 |  | col.950 |  | col.951 |  | col.952 |  | col.953 |  | col.954 |  | col.955 |  | col.956 |  | col.957 |  | col.958 |  | col.959 |  | col.960 |  | col.9 |  |
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Table 14

| Cat. tag | category  | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |    | lot 2 |     |     | title  | reference                        | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|-----------|----------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|----|-------|-----|-----|--|----------------------------------|------------------------------|------------------------------|
|          |           |          |         |           |           |           |             |              | Day 3 | Day 7 | AI | IMM   | AI  | IMM |  |                                  |                              |                              |
| 51       | 17 others | 44583_at | HG-U95B | AA003344  | NM_015474 | NP_058289 | SAMHD1      | 20pter-112   | 6.6   | 4.3   |    | 2.9   | 6.2 |     | SAM domain and HD domain   | Immunol. Lett. 74:221-224 (2000) | 200                          | 701                          |
| 52       | 17 others | 46278_at | HG-U95B | N58274    | NM_013399 | NP_037531 | C1orf5      | 15p13.3      |       |       |    | 4.6   |     |     | 77 chromosome 16 open reading frame 5                              | J. Hum. Genet. 44:383-387 (1998) | 201                          | 702                          |
| 53       | 17 others | 48388_at | HG-U95B | AA282083  | NM_018072 | NP_057156 | LOC51026    | 12p12.1      |       |       |    | 2.9   |     |     | 24 CCG-141 protein   | Unpublished -- (2000)            | 202                          | 703                          |
| 54       | 17 others | 50094_at | HG-U95B | AA102575  | NM_004657 | NP_004648 | SODR        | 24q22-q33    | 2.5   | 2.3   |    | 2.4   | 4.6 |     | 27 serum deprivation response (phosphatidylserine-binding protein) | Biochem. J. 288:729-734 (1990)   | 203                          | 704                          |
| 55       | 17 others | 50396_at | HG-U95B | A0818251  | NM_020375 | NP_065108 | C12orf5     | 12p13.3      |       |       |    | 3.5   | 2.1 | 2.3 | 36 chromosome 12 open reading frame 5                              | Nat. Genet. 26:345-348 (2000)    | 204                          | 705                          |
| 56       | 17 others | 51236_at | HG-U95B | A081740   | NM_018118 | NP_057202 | LOC51667    | 7q38         |       |       |    | 4.8   | 3.7 | 3.7 | 3 NEDD8 ultimate buster-1  | Unpublished                      | 205                          | 706                          |
| 57       | 17 others | 50657_at | HG-U95B | A038272   | NM_008186 | NP_178068 | C21orf11    | 21q22.3      | 2.6   | 4.6   |    | 6.6   | 7.3 | 3.7 | chromosome 21 open reading frame 11                                | Unpublished                      | 206                          | 707                          |
| 58       | 17 others | 52675_at | HG-U95B | A581142   |           |           | KOAA1971    | 15q24.2      |       |       |    |       |     |     | ESTs, Weekly similar to T00329 hypothetical protein                | Unpublished                      | 207                          | -                            |
|          |           |          |         |           |           |           |             |              |       |       |    | 2     |     |     | 3.3 KIAA0553 [Haploins]  |                                  |                              |                              |

| Cat. tag | category | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |    | lot 2 |     |     | title  | reference               | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|----------|----------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|----|-------|-----|-----|--|-------------------------|------------------------------|------------------------------|
|          |          |          |         |           |           |           |             |              | Day 3 | Day 7 | AI | IMM   | AI  | IMM |  |                         |                              |                              |
| 59       | 18 P450  | 47627_at | HG-U95B | A1445492  | NM_030622 | NP_065125 | CYP251      | 19q13.1      |       |       |    | 2.4   | 2.9 | 2.3 | 2.9 cytochrome P450 subfamily 1B5, polypeptide 1 | Nature 377:3-174 (1995) | 208                          | 708                          |

| Cat. tag | category                   | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |    | lot 2 |     |      | title                          | reference   | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|----------------------------|----------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|----|-------|-----|------|--------------------------------|-------------|------------------------------|------------------------------|
|          |                            |          |         |           |           |           |             |              | Day 3 | Day 7 | AI | IMM   | AI  | IMM  |                                |             |                              |                              |
| 60       | 20 protein binding protein | 48838_at | HG-U95B | A058051   | NM_003745 | NP_003736 | SSS-1       | 16p13.13     | 5.4   |       |    | 8.5   | 8.4 | 14.8 |                                |             |                              |                              |
| 61       | 20 protein binding protein | 47500_at | HG-U95B | AA605377  |           |           | IRLB        | 15q22.1      | 2.8   |       |    | 3.5   | 2.2 | 1.7  | c-myc promoter-binding protein | Unpublished | 210                          | -                            |

| Cat. tag | category      | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |    | lot 2 |    |     | title                       | reference                           | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|---------------|----------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|----|-------|----|-----|-----------------------------|-------------------------------------|------------------------------|------------------------------|
|          |               |          |         |           |           |           |             |              | Day 3 | Day 7 | AI | IMM   | AI | IMM |                             |                                     |                              |                              |
| 62       | 21 proteinase | 51972_at | HG-U95B | AA143794  | NM_017414 | NP_058110 | USP18       | 22q11.21     | 7.8   | 7.7   |    | 6.8   |    |     | ubiquitin specific protease | J. Biol. Chem. 275:8880-8888 (2000) | 211                          | 710                          |

| Cat. tag | category               | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |    | lot 2 |     |      | title   | reference                  | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|------------------------|----------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|----|-------|-----|------|---|----------------------------|------------------------------|------------------------------|
|          |                        |          |         |           |           |           |             |              | Day 3 | Day 7 | AI | IMM   | AI  | IMM  |   |                            |                              |                              |
| 63       | 24 signal transduction | 55059_at | HG-U95B | AW052069  | NM_013324 | NP_037456 | CISH        | 3p21.3       | 11.3  | 12.4  |    | 7.3   | 11  | 34.5 | cyclin inducible SH2-containing protein       | Unpublished -- (1997)      | 212                          | 711                          |
| 64       | 24 signal transduction | 55107_at | HG-U95B | A016306   | NM_014600 | NP_055415 | EPH3        | 2p21         | 2.3   |       |    | 2.4   | 2.4 | 2.4  | 1.9 EPH domain containing 3                   | Genomics 63:255-262 (2000) | 213                          | 712                          |
| 65       | 24 signal transduction | 50759_at | HG-U95B | AA646533  |           |           |             |              | 2     |       |    |       |     | 2.2  | peptidylprolyl isomerase (cyclophilin)-like 3 | Unpublished                | 214                          | -                            |

| Cat. tag | category              | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |    | lot 2 |     |     | title                                     | reference             | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|-----------------------|----------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|----|-------|-----|-----|---|-----------------------|------------------------------|------------------------------|
|          |                       |          |         |           |           |           |             |              | Day 3 | Day 7 | AI | IMM   | AI  | IMM |   |                       |                              |                              |
| 66       | 25 structural protein | 48684_at | HG-U95B | A081431   | NM_015515 | NP_066330 | HANK1       | 17q21.1      | 3.2   | 2.2   |    | 4.4   | 2.1 | 2.2 | 7 type I intermediate filament cytolinker | Unpublished -- (2002) | 215                          | 713                          |

Table 15

| Cat. tag | category                | Probe ID | Chip    | accession | RefSeq   | RefSeq   | gene symbol | map location | lot 1 |       |     | lot 2 |       |     | reference                             | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|-------------------------|----------|---------|-----------|--|--|-------------|--------------|-------|-------|-----|-------|-------|-----|---------------------------------------|------------------------------|------------------------------|
|          |                         |          |         |           |  |  |             |              | Day 3 | Day 7 | IMM | Day 3 | Day 7 | IMM |                                       |                              |                              |
| 67       | 26 transcription factor | 43350_at | HG-U95B | AI568310  | NM_001572<br>NM_004038<br>NM_004039<br>NM_004040<br>NM_004041<br>NM_004042 | NP_001563<br>NP_004020<br>NP_004021<br>NP_004022 | IRF7        | 11p15.5      | 5.8   | 5     |     | 4     |       |     | MoI. Cell Biol. 17:5748-5757 (1997)   | 216, 217<br>218, 219         | 714, 715<br>716, 717         |
| 68       | 26 transcription factor | 48387_at | HG-U95B | AI290376  | NM_004235  | NP_004226  | KLF4        | 9q31         | 2.5   |       | 2.7 | 2.5   |       |     | J Biol Chem 1998 Jan 9;273(2):1026-31 | 220                          | 718                          |

| Cat. tag | category | Probe ID | Chip    | accession | RefSeq | RefSeq | gene symbol | map location | lot 1 |       |     | lot 2 |       |      | reference   | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------|----------|----------|---------|-----------|--------|--------|-------------|--------------|-------|-------|-----|-------|-------|------|---|------------------------------|------------------------------|
|          |          |          |         |           |        |        |             |              | Day 3 | Day 7 | IMM | Day 3 | Day 7 | IMM  |   |                              |                              |
| 69       |          | 42302_at | HG-U95B | AI082042  |        |        |             |              | 6.3   | 2.4   | 5.7 | 3.2   | 4.8   | 4.6  | ESTs  | 221                          | -                            |
| 70       |          | 42721_at | HG-U95B | AI261480  |        |        |             |              | 5.6   | 3.9   | 4.8 | 5.9   | 3.6   | ESTs | Unpublished   | 222                          | -                            |
| 71       |          | 42438_at | HG-U95B | AI694413  |        |        |             |              | 4.4   | 9.1   | 8.8 | 8     | 8.9   | 3    | olfactory receptor, family 2, subfamily L, member 8 | 223                          | -                            |
| 72       |          | 45608_at | HG-U95B | AI202327  |        |        |             |              | 2.1   | 2.1   |     | 2.8   | 2.1   | ESTs | Unpublished   | 224                          | -                            |
| 73       |          | 46120_at | HG-U95B | AA149250  |        |        |             |              | 3.5   | 7.5   | 5.4 | 12.9  | 7.6   | ESTs | Unpublished   | 225                          | -                            |
| 74       |          | 46378_at | HG-U95B | AA019557  |        |        |             |              | 2.1   |       |     | 7.4   | 7.4   | ESTs | Unpublished   | 226                          | -                            |
| 75       |          | 47252_at | HG-U95B | W73864    |        |        |             |              | 3.2   |       |     | 2.3   | 3.7   | ESTs | Unpublished   | 227                          | -                            |
| 76       |          | 47380_at | HG-U95B | AA928060  |        |        |             |              |       | 7.9   | 5.1 |       | 3     | ESTs | Unpublished   | 228                          | -                            |
| 77       |          | 51024_at | HG-U95B | AI400569  |        |        |             |              | 3.7   | 2.4   |     | 2.2   |       | ESTs | Unpublished   | 229                          | -                            |
| 78       |          | 54922_at | HG-U95B | AI116798  |        |        |             |              | 2.4   | 2.1   |     | 2.2   |       | ESTs | Unpublished   | 230                          | -                            |
| 79       |          | 55491_at | HG-U95B | AB015711  |        |        |             |              | 3     | 2.3   | 2.3 | 2.2   | 4.9   | ESTs | Unpublished   | 231                          | -                            |

Table 16

| Cat. category |                                   | Probe ID   | Chip    | accession | RefSeq    | RefSeq    | gene symbol  | map location | Day 3 |      | Day 7 |      | Day 12 |      | title   | reference   | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |   |
|---------------|-----------------------------------|------------|---------|-----------|-----------|-----------|--------------|--------------|-------|------|-------|------|--------|------|---|---|---------------------------------|---------------------------------|---|
|               |                                   |            |         |           |           |           |              |              | AI    | IMM  | AI    | IMM  | AI     | IMM  |   |   |                                 |                                 |   |
| 1             | 3 cell cycles                     | 63347.at   | HQ-U95C | AA1745981 | NM_006403 | NP_006394 | HEF1         | 6p25-p24     | 4.4   | 3    | 7     |      |        | 11.3 | enhancer of filamentation 1<br>(case-like docking, Cdk-<br>associated substrate related)              | Mol Cell Biol. 1996<br>Jul;16(7):3327-37                | 232                             | 719                             |   |
| 2             | 5 cytokine related                | 48656.at   | HQ-U95C | AI933886  | NM_030998 | NP_112230 | ZS637        | 17q25.2      | 11    | 5.7  | 11.4  | 7.9  | 4.4    |      | G protein coupled receptor<br>interacting protein,<br>complement-c1q tumor<br>necrosis factor-related | unpublished   | 233                             | 720                             |   |
| 3             | 7 enzyme                          | 62213.at   | HQ-U95C | AA166620  | NM_032211 | NP_115987 | LOXL4        | 10q24        | 38.5  | 21.9 | 8.6   | 8.1  | 7.6    | 15.4 | lysyl oxidase-like 4/FLJ121889  | Unpublished - (2001)                                    | 234                             | 721                             |   |
| 4             | 8 hypothetical protein            | 49146.at   | HQ-U95C | AA305101  |           |           | DKFZP564I171 | 5p13.33      |       |      | 11    | 8.9  | 11.3   | 4    | DKFZP564I171 protein  | Nature 377 (5547 Suppl): 3-<br>174, 1995                | 235                             | -                               |   |
| 5             | 8 hypothetical protein            | 52497.at   | HQ-U95C | AI129517  |           |           |              |              |       |      | 2.2   | 2.2  | 4.1    |      | integrin, beta 8  | Unpublished   | 236                             | -                               |   |
| 6             | 8 hypothetical protein            | 56808.at   | HQ-U95C | AW007800  |           |           | KIAA0592     | 10q11.21     |       |      | 8.3   | 5.7  | 10.6   | 3.3  | endogenous retroviral protease  | Unpublished   | 237                             | -                               |   |
| 7             | 8 hypothetical protein            | 60001.at   | HQ-U95C | AA405241  | NM_025054 | NP_078330 | FLJ23132     | 8q13         | 2.4   |      | 2.4   |      |        | 3.2  | hypothetical protein FLJ23132   | unpublished   | 238                             | 722                             |   |
| 8             | 8 hypothetical protein            | 60949.at   | HQ-U95C | AI935345  | NM_019027 | NP_061800 | FLJ20273     | 4p13-p12     | 3     |      |       |      | 2.1    | 3.1  | hypothetical protein  | unpublished   | 239                             | 723                             |   |
| 9             | 8 hypothetical protein            | 63760.at   | HQ-U95C | AA814195  | NM_018370 | NP_060840 | FLJ11269     | 12q23.3      | 2.2   |      | 2.7   |      | 2      |      | hypothetical protein FLJ11269   | unpublished   | 240                             | 724                             |   |
| 10            | 8 hypothetical protein            | 63794.at   | HQ-U95C | AI150460  |           |           | KIAA1404     | 20q13.13     | 5.7   |      | 5.7   | 3.9  | 2.2    |      | KIAA1404 protein  | Genome Res. 6 (6): 807-28<br>1996                       | 241                             | -                               |   |
| 11            | 8 hypothetical protein            | 65181.at   | HQ-U95C | AD80703   |           |           | KIAA1268     | 3q21.1       | 5.9   | 2.3  | 3     | 2.7  |        |      | KIAA1268 protein  | Unpublished   | 242                             | -                               |   |
| 12            | 9 interferon-inducible<br>protein | 68130.at   | HQ-U95C | AA651720  | NM_022147 | NP_071430 | IFRQ328      | 3q26.2       | 3.7   | 5.8  | 3     | 4.5  | 8      |      | 28kD interferon responsive<br>protein   | Unpublished -   | 243                             | 725                             |   |
| 13            | 12 membrane protein               | 48799.at   | HQ-U95C | AI969888  | NM_015352 | NP_056207 | NPDC1        | 9q34.3       | 2     |      | 2.7   |      | 2.1    | 2    | neural proliferation,<br>differentiation and control, 1   | EMBO J. 194806-4816 (2000)                              | 244                             | 726                             |   |
| 14            | 12 membrane protein               | 51776.s.at | HQ-U95C | AI745525  | NM_005764 | NP_000755 | DD96         | 1p32.3       | 9.6   | 12.6 | 3.8   | 7.7  | 4.5    | 3.1  | epithelial protein up-regulated<br>in carcinoma, membrane<br>associated protein 17                    | Clin. Cancer Res. 11:209-1215<br>(1995)                 | 245                             | 727                             |   |
| 14            | 12 membrane protein               | 59794.g.at | HQ-U95C | AA872415  | NM_005764 | NP_000755 | DD96         | 1p32.3       | 6.8   | 11.9 | 2.6   | 5.5  | 6.2    | 2.6  | epithelial protein up-regulated<br>in carcinoma, membrane<br>associated protein 17                    | Clin. Cancer Res. 11:209-1215<br>(1995)                 | 245                             | 727                             |   |
| 15            | 14 MHC                            | 51280.at   | HQ-U95C | AI983880  | NM_005514 | NP_005505 | HLA-B        | 6p21.3       |       |      | 2.3   |      |        | 2    | major histocompatibility<br>complex, class I, B   | Proc. Natl. Acad. Sci. U.S.A.<br>84:7237-7241 (1987)    | 246                             | 728                             |   |
| 16            | 16 oncogenesis                    | 65963.at   | HQ-U95C | W72043    |           |           | D2S448       | Zcen-p25.1   | 4.1   |      |       |      |        | 3.1  | 4.8   | Melanoma associated gene                                | Unpublished                     | 247                             | - |
| 17            | 17 others                         | 61871.r.at | HQ-U95C | AI963349  | NM_021816 | NP_068580 | WW45         | 14q13-q23    | 2.3   |      | 2.7   |      | 2.5    | 3.3  | WW Domain-Containing Gene   | Biochem. Biophys. Res.<br>Commun. 276:980-988 (2000)    | 248                             | 728                             |   |
| 17            | 17 others                         | 65587.at   | HQ-U95C | AI307256  | NM_021816 | NP_068580 | WW45         | 14q13-q23    | 4.8   |      |       |      | 2.2    | 4    | WW Domain-Containing Gene   | Biochem. Biophys.<br>Res. Commun. 276:980-988<br>(2000) | 248                             | 728                             |   |
| 18            | 17 others                         | 84368.s.at | HQ-U95C | AW001184  | NM_016103 | NP_060573 | LRRCS        | 1p22.2       | 2.4   |      |       | 2.6  | 2.1    | 5    | leucine-rich repeat-containing<br>5   | Unpublished - 0   | 248                             | 730                             |   |
| 18            | 17 others                         | 84714.at   | HQ-U95C | AI626075  | NM_003542 | NP_003539 | HAEE2        | 1q21         |       |      | 3.1   |      |        | 4.3  | HAEE2, family 2   | Science 278:839-840 (1994)                              | 250                             | 731                             |   |
| 20            | 17 others                         | 65706.at   | HQ-U95C | 278342    | NM_014028 | NP_054747 | HSPG019      | 6q21         |       |      | 3.3   | 4.3  | 2.3    | 3.1  | HSPG019 protein   | Unpublished - 0   | 251                             | 732                             |   |
| 21            | 21 proteinase                     | 63329.at   | HQ-U95C | AI626008  | NM_006496 | NP_006447 | TMPRSS2      | 21q22.3      | 2.4   |      |       | 2.6  | 2      |      | transmembrane protease,<br>serine 2   | Genomics 44:309-320 (1997)                              | 252                             | 733                             |   |
| 22            | 21 proteinase                     | 63866.at   | HQ-U95C | AI240887  | NM_001614 | NP_001605 | CTSC         | 11q14.1-     | 6.2   | 8.2  | 3.6   | 9    | 7.6    | 2.5  |   |   | 253                             | 734                             |   |
| 23            | 24 signal transduction            | 63332.at   | HQ-U95C | AA127686  | NM_014143 | NP_054802 | BT-H1        | 8p14.2       |       |      | 6     |      | 9      | 8.2  | ESRs  | Nat. Med. 5:1385-1389 (1999)                            | 254                             | 735                             |   |
| 24            | 25 structural protein             | 48844.at   | HQ-U95C | AD61431   | NM_015515 | NP_056330 | NAK1         | 17q21.1      |       |      |       |      |        |      | Type I intermediate filament  | Unpublished   | 255                             | -                               |   |
| 25            | 25 structural protein             | 57554.s.at | HQ-U95C | AI651213  | NM_018934 | NP_081857 | KIAA1298     | 12q24.11     | 2.2   |      | 2.2   | 4.4  | 2.1    | 2.1  | cytochrome<br>P450  | DNA Res. 7:85-79 (2000)                                 | 256                             | 737                             |   |
| 26            |                                   | 60246.at   | HQ-U95C | AA676810  |           |           |              |              |       |      |       |      |        |      | RNA sapiens, clone<br>IMAGE442837, mRNA, partial  | Unpublished   | 257                             | -                               |   |
| 27            |                                   | 63330.at   | HQ-U95C | AD075407  |           |           |              |              | 4.5   | 6.6  |       |      | 4.7    |      | cds   | Unpublished   | 258                             | -                               |   |
| 28            |                                   | 63318.at   | HQ-U95C | AD43238   |           |           |              |              | 28.4  | 14.5 |       |      | 11.3   | 3.3  | ESRs  | Unpublished   | 259                             | -                               |   |
| 29            |                                   | 65437.at   | HQ-U95C | AW021108  |           |           |              |              | 2.4   | 3.1  | 9.9   | 4.4  | 2.1    |      | ESRs  | Unpublished   | 260                             | -                               |   |
| 30            |                                   | 65372.at   | HQ-U95C | AW474820  |           |           |              |              | 2.5   | 4.5  | 6.8   | 3.5  | 3.5    |      | ESRs  | Genomics 23: 42-50 1994                                 | 261                             | -                               |   |
| 31            |                                   | 66893.at   | HQ-U95C | AI733082  |           |           |              |              | 11.1  | 23.5 | 39.9  | 33.2 | 12.9   | 11.8 | ESRs  | Unpublished   | 262                             | -                               |   |

Table 17

| Cat. category          | Probe ID | Chip    | accession | RefSeq   | RefSeq | gene symbol  | map location | lot 1 |       | lot 2 |       | title  | reference   | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|------------------------|----------|---------|-----------|--|--------|--------------|--------------|-------|-------|-------|-------|--|---|------------------------------|------------------------------|
|                        |          |         |           |  |        |              |              | Day 3 | Day 7 | Day 3 | Day 7 |  |   |                              |                              |
| 1 enzyme               | 75024_at | HG-U95D | U9082     | NM_001111, NP_001102, NM_015840, NP_058655, NM_015841, NP_058656 | ADAR   | 1q21.1-q21.2 | 2.8          | 2.8   |       |       |       | adenosine deaminase, RNA-specific, ADAR isoform a-c              | Proc. Natl. Acad. Sci. U.S.A. 91:11457-11461 (1994) | 263,764,265,736, 739, 740    |                              |
| 2 enzyme               | 78337_at | HG-U95D | AA687477  | NM_014090, NP_054799   | DUOX2  | 15q15.3-q21  | 3.3          | 2.2   | 2.8   | 5.7   | 2.5   | thiol oxidase 2  | Unpublished: -- (2000)                              | 266                          | 741                          |
| 3 enzyme               | 81966_at | HG-U95D | AI199418  | NM_021105, NP_066928   | PLSCR1 | 3q23         | 3.3          | 2.1   |       |       | 3.3   | phospholipid scramblase 1  | J. Biol. Chem. 272 (29), 18240-18244 (1997)         | 267                          | 742                          |
| 4 hypothetical protein | 75423_at | HG-U95D | AU245770  |  |        |              | 2.1          |       |       |       | 2.2   | Homo sapiens mRNA; cDNA DKFZ6544N1164 (from clone DKFZ6544N1164) |   | 268                          |                              |
| 5 hypothetical protein | 75657_at | HG-U95D | W60832    |  |        |              | 3.6          | 3.2   | 3.4   | 4.3   | 3.1   | Homo sapiens cDNA FLJ32334 (from clone FLJ32334)                 |   | 269                          |                              |
| 6 hypothetical protein | 82008_at | HG-U95D | AA189927  |  |        |              |              |       | 2.1   |       | 11.7  | Homo sapiens cDNA: FLJ121270 (from clone COL01749)               |   | 270                          |                              |
| 7 hypothetical protein | 91851_at | HG-U95D | A051434   |  |        |              | 3.5          |       |       | 2.1   | 2.3   | Homo sapiens cDNA FLJ12136 (from clone MAMMA1000312)             |   | 271                          |                              |
| 8 signal transduction  | 88899_at | HG-U95D | AY001846  | NM_002463, NP_002454   | MX2    | 21q22.3      | 9.8          | 9.8   |       |       | 3.7   | myxodirus (influenza) resistance 2, homolog of nucle             | Mol. Cell. Biol. 9:5062-5072 (1989)                 | 272                          | 743                          |
| 9                      | 71137_at | HG-U95D | AJ889178  |  |        |              | 4.4          | 4     | 3.5   | 5.8   | 3.8   | ESTs   |   | 273                          |                              |
| 10                     | 74909_at | HG-U95D | AY029462  |  |        |              | 4.3          |       |       |       | 8.5   | ESTs   |   | 274                          |                              |
| 11                     | 75000_at | HG-U95D | AJ735440  |  |        |              |              |       | 2.6   |       | 4.4   | ESTs   |   | 275                          |                              |
| 12                     | 80077_at | HG-U95D | AJ765808  |  |        |              | 3            | 3.6   |       | 7.7   |       | ESTs   |   | 276                          |                              |
| 13                     | 80876_at | HG-U95D | AA513406  |  |        |              | 2.2          |       |       | 3.7   | 2.1   | ESTs   |   | 277                          |                              |



Table 18

| Cat. category                     | Probe ID   | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |       | lot 2 |       |   | title  | reference  | SEQ ID NO:<br>(nucleotide seq.)   | SEQ ID NO:<br>(amino acid seq.)       |     |     |
|-----------------------------------|------------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|-------|-------|-------|---|--|--|---|---------------------------------------|-----|-----|
|                                   |            |         |           |           |           |             |              | Day 3 | Day 7 | Day 3 | Day 7 | Day 3 | Day 7                                     |  |  |   |                                       |     |     |
| 1 2 cell adhesion                 | 90421_at   | HG-U95E | AA633203  | NM_032355 | NP_150280 | EPST11      | 13q13.3      | 7.2   | 9.9   | 3.4   | 9.4   |       | epithelial stromal interaction 1 (breast) | Unpublished - 0  | 278  | 744   |                                       |     |     |
| 2 4 chemokine                     | 90188_at   | HG-U95E | AB28371   | NM_006072 | NP_006063 | SCYA26      | 7q11.2       | 26.3  | 18.1  | 30.4  | 35.1  | 16.7  | 29.8                                      | small inducible cytokine subfamily A (Cys-Cys), member 26 (lecta1in-3)                         | J. Exp. Med. 185:1163-1172(1997)                                   | 279   | 745                                   |     |     |
| 3 7 enzyme                        | 72682_at   | HG-U95E | AA705851  | NM_005504 | NP_005485 | BCAT1       | 12p12.1      |       |       | 2.7   | 3.4   | 10.5  | 3.7                                       | Human sapiens cDNA: FLJ21270 fls. clone COL01749/ branched chain aminotransferase 1, cytosolic |  | 280   | 746                                   |     |     |
| 4 7 enzyme                        | 77749_at   | HG-U95E | AB80938   | NM_014314 | NP_055120 | RIG-I       | 9p12         |       |       | 3.9   | 3.4   | 5.1   | 6.4                                       | 2.3 RNA helicase   | Thesis - (1997)  | 281   | 747                                   |     |     |
| 5 7 enzyme                        | 77751_at   | HG-U95E | AB397061  | NM_004751 | NP_004742 | GCNT3       | 15q21.3      |       |       | 2.5   | 3.5   |       |   | 2 glucosaminyl (N-acetyl) transferase 3, mucin type  | J. Biol. Chem. 274:3215-3221 (1999)                                | 282   | 748                                   |     |     |
| 6 7 enzyme                        | 90682_at   | HG-U95E | AB340262  | NM_002535 | NP_002526 | OAS2        | 12q24.2      | 4.9   | 10.2  |       |       | 4.1   |   | 2'-5'-oligoadenylate synthetase  | EMBO J. 6:1273-1280 (1987)   | 283, 284  | 749, 750                              |     |     |
| 7 8 hypothetical protein          | 87328_at   | HG-U95E | AA610377  | NM_022837 | NP_013748 | FLJ22833    |              |       |       | 3.6   | 3.7   | 6.1   | 4.2                                       | hypothetical protein FLJ22833  | Unpublished - 0  | 285   | 751                                   |     |     |
| 8 8 hypothetical protein          | 88582_at   | HG-U95E | AA779704  |           |           |             |              | 3.1   |       |       |       | 2.8   |   | Human sapiens cDNA FLJ21336 fls. clone MAMMA100312   |  | 286   |                                       |     |     |
| 9 8 hypothetical protein          | 72687_at   | HG-U95E | AW024619  |           |           |             |              |       | 2.6   |       |       |       | 2.3                                       | Human sapiens mRNA: cDNA DKF Zp434G227 (from clone DKF Zp434G227)                              |  | 287   |                                       |     |     |
| 10 8 hypothetical protein         | 72890_s_at | HG-U95E | AA188856  |           |           |             |              |       | 4.2   | 3.9   | 3.8   | 18.8  | 5.5                                       | Human sapiens cDNA: FLJ21270 fls. clone COL01749   | DNA Res. 6 (5): 329-336 (1999)                                     | 288   |                                       |     |     |
| 11 8 hypothetical protein         | 77546_at   | HG-U95E | AB59144   |           |           |             |              | 4.3   | 5.8   | 2.6   |       | 5.5   | 9.8                                       | KIAA1127   |  | 289   |                                       |     |     |
| 12 8 hypothetical protein         | 80926_at   | HG-U95E | AA806114  |           |           |             |              | 4.2   | 6.1   | 5.3   | 5.3   | 7.2   | 2.1                                       | 2.6  | hypothetical protein FLJ20281                                      | DNA Res. 7:347-355(2000)  | 290                                   |     |     |
| 13 8 hypothetical protein         | 83376_at   | HG-U95E | AB168314  |           |           |             |              |       |       |       |       |       |   |  |  | 291   | 752                                   |     |     |
| 14 8 hypothetical protein         | 83541_at   | HG-U95E | AB343912  |           |           |             |              |       |       | 2.6   |       |       |   |  | 2 KIAA1685 protein   | Unpublished - 0   | 292                                   | 753 |     |
| 15 8 hypothetical protein         | 89255_at   | HG-U95E | AB03046   |           |           |             |              |       |       | 3.5   | 7     |       |   |  | 2.4  | 293   |                                       |     |     |
| 16 8 hypothetical protein         | 89834_at   | HG-U95E | AB84081   |           |           |             |              |       |       | 2.7   |       |       |   |  | 3.1  | 294   |                                       |     |     |
|                                   |            |         |           |           |           |             |              |       |       |       |       |       |   |  | 3.1  | ESTs. Weakly similar to T22914 hypothetical protein F58E10.4 - Caenorhabditis elegans |                                       |     |     |
|                                   |            |         |           |           |           |             |              |       |       |       |       |       |   |  | C. elegans   |   |                                       |     |     |
| 17 8 hypothetical protein         | 89902_at   | HG-U95E | AA492878  | NM_024738 | NP_078014 | FLJ21415    | 12q24.21     |       |       | 3.4   |       |       |   |  | 2.7  | hypothetical protein FLJ21415   | Unpublished - (2000)                  | 295 | 754 |
| 18 8 hypothetical protein         | 91420_at   | HG-U95E | AA558752  | NM_023080 | NP_075568 | FLJ20989    |              |       |       | 3.4   |       |       |   |  | 2.1  | hypothetical protein FLJ20989   | Unpublished - 0                       | 296 | 755 |
| 19 8 interferon-inducible protein | 84883_at   | HG-U95E | AA48168   | NM_080657 | NP_542388 | viprin      | 2p25.3       | 14.8  | 13.5  | 2.7   | 6.6   | 15.4  |   |  | Human sapiens viprin (c15), mRNA                                   | Unpublished - (2001)  | 297                                   | 756 |     |
| 20 12 membrane protein            | 77680_at   | HG-U95E | AB89132   | NM_021101 | NP_068924 | CLDN1       | 3q28-q29     |       |       | 2.6   |       |       | 5.4                                       |  |  |   | 298                                   | 757 |     |
| 21 12 membrane protein            | 86507_at   | HG-U95E | AB832218  | NM_031308 | NP_112598 | EPK1        |              |       |       | 2.6   | 3.6   |       |   |  | 3.2  | claudin 1   | J. Biol. Chem. 276:13340-13347 (2001) | 299 | 758 |
| 22 16 oncogenesis                 | 69619_at   | HG-U95E | AB70935   | NM_031458 | NP_113046 | BAL         | 3q13         | 3.5   | 3.1   | 2.2   | 3.1   | 2.2   | 3.1                                       | 2.4  | aggressive lymphoma gene   | Blood 96:4328-4334(2000)  | 300                                   | 759 |     |
| 23 16 oncogenesis                 | 67816_s_at | HG-U95E | AB78308   | NM_004225 | NP_004216 | MFHAS1      | 8p23.1       | 3     |       | 3.4   | 3.1   | 3.5   | 2.7                                       |  | malignant fibrous histiocytoma amplified sequence 1                | Cancer Res. 59:511-515 (1999)   | 301                                   | 760 |     |
| 23 16 oncogenesis                 | 89851_at   | HG-U95E | AW003551  | NM_004225 | NP_004216 | MASS1       | 8p23.1       |       |       | 4.3   |       | 3.2   | 4.2                                       |  | MFH-amplified sequences with leucine-rich tandem repeats 1 (MASS1) | Cancer Res. 59:511-515 (1999)   | 301                                   | 760 |     |
| 24 17 others                      | 80075_at   | HG-U95E | AB90026   | NM_000968 | NP_000959 | RPL4        | 15q22        | 2.2   |       |       |       |       | 2.3                                       |  | ribosomal protein L4   | Biochim. Biophys. Acta 1218:475-478 (1993)  | 302                                   | 761 |     |
| 25 17 others                      | 85090_at   | HG-U95E | AB554809  | NM_012153 | NP_032885 | EIF         | 11p12        | 2.3   |       |       |       |       | 3.3                                       |  | 3 kDa homologous factor  | Biochem. Biophys. Res. Commun. 264:119-126 (1999)                                     | 303                                   | 762 |     |

Table 19

|    |                        |            |         |          |           |           |            |          |     |     |     |   |   |     |     |
|----|------------------------|------------|---------|----------|-----------|-----------|------------|----------|-----|-----|-----|---|---|-----|-----|
| 25 | 17 others              | 85082_at   | HG-U95E | A554809  | NM_012153 | NP_030285 | EHF        | 11p12    | 2.3 | 2.1 | 3.3 | 7 ets homologous factor   | Biochem. Biophys. Res. Commun. 264:119-126 (1999) | 303 | 762 |
| 26 | 17 others              | 89320_at   | HG-U95E | AA308288 | NM_023360 | NP_115766 | NFK        | 2q14.2   |     | 2.9 | 2.1 | 3.4 nucleolar protein interacting with the FHA domain of pK1-67                                     | J. Biol. Chem. 276:25386-25391 (2001)             | 304 | 763 |
| 27 | 20 protein binding     | 89338_at   | HG-U95E | AA102335 | NM_025151 | NP_079427 | rab11-FIP1 | 8p11.22  |     | 4.4 |     | 14.5 Rab effector protein Rab-11 interacting recycling protein (rab11)-family interacting protein 1 | J. Biol. Chem. 276:38067-39075 (2001)             | 305 | 784 |
| 28 | 24 signal transduction | 87125_at   | HG-U95E | A825186  | NM_024865 | NP_078941 | TBLR1      | 3q23     | 2.8 |     | 4.4 | nuclear receptor co-repressor/HDAC3 complex subunit   | Exp. Hematol. 28:1286-1298 (2000)                 | 306 | 765 |
| 29 | 27 transporter         | 34759_at   | HG-U95E | U68404   | NM_005828 | NP_005619 | SLC1A5     | 19q13.3  |     | 2.5 |     | 2.9 hbc-647 mRNA sequence (SOLUTE CARRIER FAMILY 1 (NEUTRAL AMINO ACID TRANSPORTER), MEMBER 5)      | J. Virol. 73: 4470-4474 (1999)                    | 307 | 766 |
| 30 | 27 transporter         | 87860_s_at | HG-U95E | AW018409 | NM_018354 | NP_057438 | SLC22A12   | 1q43     | 2.7 | 2.7 |     | 2.9 solute carrier family 21 (organic anion transporter), member 12                                 | Unpublished -- (2001)                             | 308 | 787 |
| 31 | 27 transporter         | 88617_at   | HG-U95E | N21310   | NM_012434 | NP_038586 | SLC17A5    | 6q14-q15 |     | 2.7 |     | 2.9 solute carrier family 17 (anion/sugar transporter), member 5                                    | Nat. Genet. 23:462-465 (1999)                     | 309 | 788 |
| 32 |                        | 67357_at   | HG-U95E | M70685   |           |           |            |          | 2.6 |     | 2.1 | discs large (Drosophila) homolog 1  |   | 310 | -   |

Table 20

| Cat. category | Tag                 | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location  | lot 1 |       |      | lot 2 |       |      | title  | reference   | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|---------------|---------------------|----------|---------|-----------|-----------|-----------|-------------|---------------|-------|-------|------|-------|-------|------|--|---|------------------------------|------------------------------|
|               |                     |          |         |           |           |           |             |               | Day 3 | Day 7 | AI   | Day 3 | Day 7 | AI   |  |   |                              |                              |
| 1             | 1 apoptosis         | 33412_at | HG-U95A | AI335946  | NM_002305 | NP_002286 | LGALS1      | 22q13.1       | -2    | -6.8  | -2.6 | -6.8  | -2.6  | -2.6 | beta-galactosidase binding lectin precursor  | Proc. Natl. Acad. Sci. U.S.A. 83:7603-7607 (1986) | 311                          | 769                          |
|               |                     |          |         |           |           |           |             |               |       |       |      |       |       |      |  |   |                              |                              |
|               |                     |          |         |           |           |           |             |               |       |       |      |       |       |      |  |   |                              |                              |
| 2             | 2 cell adhesion     | 31893_at | HG-U95A | M76482    | NM_001844 | NP_001835 | DSG3        | 18q12.1-q12.2 | -3.6  | -3.6  | -3.6 | -3.6  | -3.6  | -3.6 | desmoglein 3 protein   | Cell 67:869-877 (1991)                            | 312                          | 770                          |
| 3             | 2 cell adhesion     | 34193_at | HG-U95A | AF002246  | NM_006614 | NP_006605 | CHL1        | 3p25          | -2.5  | -2.5  | -2.5 | -2.5  | -2.5  | -2.5 | cell adhesion molecule with homology to L1CAM (Close homologue of L1)                | Hum. Genet. 103:355-364 (1998)                    | 313                          | 771                          |
| 4             | 2 cell adhesion     | 36284_at | HG-U95A | Y12642    | NM_003695 | NP_003686 | E46         | 9q24-qter     | -10.3 | -7.2  | -7.2 | -7.2  | -7.2  | -7.2 | 5.8 lymphocyte antigen 6 complex, locus D  | J. Cell Biol. 128:1677-1683 (1995)                | 314                          | 772                          |
| 5             | 2 cell adhesion     | 38112_at | HG-U95A | X15988    | NM_004385 | NP_004378 | CSPG2       | 5q14.3        | -2.1  | -2.1  | -2.1 | -2.1  | -2.1  | -2.1 | chondroitin sulfate proteoglycan 2 (versican)  | J. Biol. Chem. 268:13120-13125 (1993)             | 315                          | 773                          |
| 6             | 2 cell adhesion     | 38127_at | HG-U95A | Z48189    | NM_002697 | NP_002688 | SDC1        | 20p24.1       | -2.2  | -2.3  | -2.3 | -2.3  | -2.3  | -2.3 | syndecan 1   | J. Biol. Chem. 265:6884-6889 (1990)               | 316                          | 774                          |
| 7             | 2 cell adhesion     | 39579_at | HG-U95A | U89916    | NM_008584 | NP_008575 | CLDN10      | 13q31-q34     | -2.3  | -4.6  | -4.6 | -4.6  | -4.6  | -4.6 | claudin 10   | Unpublished                                       | 317                          | 775                          |
|               |                     |          |         |           |           |           |             |               |       |       |      |       |       |      |  |   |                              |                              |
|               |                     |          |         |           |           |           |             |               |       |       |      |       |       |      |  |   |                              |                              |
| 8             | 4 chemokine         | 823_at   | HG-U95A | U84481    | NM_002686 | NP_002687 | SCYD1       | 16q13         | -2.2  | -8.5  | -8.5 | -8.5  | -8.5  | -8.5 | small inducible cytokine subfamily D (Cys-X3-Cys), member 1 (fractaline, hepatactin) | Nature 385:640-644 (1997)                         | 318                          | 776                          |
|               |                     |          |         |           |           |           |             |               |       |       |      |       |       |      |  |   |                              |                              |
|               |                     |          |         |           |           |           |             |               |       |       |      |       |       |      |  |   |                              |                              |
| 9             | 5 cytokine related  | 1385_at  | HG-U95A | M77249    | NM_000358 | NP_000349 | TGFBI       | 5q31          | -3.8  | -2.2  | -5.3 | -3    | -3    | -3   | transforming growth factor, beta-induced, 88kD                                       | DNA Cell Biol. 11:511-522 (1992)                  | 319                          | 777                          |
| 10            | 5 cytokine related  | 38631_at | HG-U95A | M82357    | NM_006281 | NP_006282 | TNFAIP2     | 14q32         | -4.4  | -4.4  | -4.4 | -4.4  | -4.4  | -4.4 | tumor necrosis factor, alpha-induced protein 2                                       | J. Immunol. 148:3302-3312 (1992)                  | 320                          | 778                          |
|               |                     |          |         |           |           |           |             |               |       |       |      |       |       |      |  |   |                              |                              |
|               |                     |          |         |           |           |           |             |               |       |       |      |       |       |      |  |   |                              |                              |
| 11            | 6 cytosolic protein | 35775_at | HG-U95A | AL050025  | NM_001118 | NP_001119 | AP1G1       | 16q23         | -3.6  | -2.8  | -3.6 | -3.7  | -3.7  | -3.7 | adaptor-related protein complex 1, gamma 1   | Genomics 50:275-280 (1998)                        | 321                          | 779                          |
| 12            | 6 cytosolic protein | 40508_at | HG-U95A | AF025887  | NM_001512 | NP_001503 | GSTA4       | 6p12          | -8    | -3.8  | -3.8 | -3.8  | -3.8  | -3.8 | glutathione S-transferase A4   | Biochem. J. 330:175-179 (1998)                    | 322                          | 780                          |

Table 21

| Cat. category tag | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location   | lot 1 |       |      | lot 2 |       |       | title  | reference   | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|-------------------|----------|---------|-----------|-----------|-----------|-------------|----------------|-------|-------|------|-------|-------|-------|--|---|------------------------------|------------------------------|
|                   |          |         |           |           |           |             |                | Day 3 | Day 7 | IMM  | AI    | Day 3 | Day 7 |  |   |                              |                              |
| 13 7 enzyme       | 32805.at | HG-U95A | U05861    | NM_001353 | NP_001345 | AKR1C1      | 10p15-p14      | -2.7  | -3.2  | -3.1 | -2.4  |       |       | hepatic dihydrodiol dehydrogenase gene, exon 9                   | Biochemistry 1990 Jan 30;28(4):1080-7               | 323                          | 781                          |
| 14 7 enzyme       | 34837.at | HG-U95A | M12963    | NM_000687 | NP_000658 | ADH1A       | 4q21-q23       |       | 3     | -8.1 |       |       |       | -20.3 class I alcohol dehydrogenase, alpha subunit               | Proc. Natl. Acad. Sci. U.S.A. 83:634-638 (1986)     | 324                          | 782                          |
| 15 7 enzyme       | 34835.at | HG-U95A | AL021026  | NM_001460 | NP_001451 | FAO2.3      | 1q23-q25       | -2.2  |       | -2.4 | -3.7  |       |       | 3417033 (Flavin-Monooxygenase 2) containing                      | Proc. Natl. Acad. Sci. U.S.A. 89:1685-1689 (1992)   | 325                          | 783                          |
| 16 7 enzyme       | 35947.at | HG-U95A | M98447    | NM_000359 | NP_000350 | HGNCR       | 14q11.2        | -2    | -3.2  | -3.7 | -2.7  |       |       | transglutaminase 2   | Proc. Natl. Acad. Sci. U.S.A. 87:9333-9337 (1990)   | 326                          | 784                          |
| 17 7 enzyme       | 38247.at | HG-U95A | M12272    | NM_000689 | NP_000660 | ADH1C       | 4q21-q23       |       | -4.1  |      | -6.1  |       |       | -14.2 class I alcohol dehydrogenase, gamma subunit               | Eur. J. Biochem. 145:447-453 (1984)                 | 327                          | 785                          |
| 18 7 enzyme       | 38454.at | HG-U95A | AF037335  | NM_001218 | NP_001209 | CA12        | 15q22          | -4    | -3.5  | -6.3 | -4    |       |       | -3 carbonic anhydrase XII precursor                              | Proc. Natl. Acad. Sci. U.S.A. 92:11810-11813 (1995) | 328                          | 786                          |
| 19 7 enzyme       | 36658.at | HG-U95A | D13843    | NM_014782 | NP_055577 | DHCR24      | 1p33-p31.1     |       | -2.3  |      | -2.1  |       |       | -4.3 squalin-1   | DNA Res. 14:7-36 (1994)                             | 329                          | 787                          |
| 20 7 enzyme       | 37215.at | HG-U95A | AF040798  | NM_002863 | NP_002854 | PYGL        | 14q21-q22      | -2.2  | -3.2  | -2.7 | -2.2  |       |       | glycogen phosphorylase   | Proc. Natl. Acad. Sci. U.S.A. 83:132-8136 (1986)    | 330                          | 788                          |
| 21 7 enzyme       | 37415.at | HG-U95A | AB018258  |           | BAA34435  | ATP10B      | 5q34           |       | -3.2  |      |       |       |       | -3 ATPase, Class V, type 10B                                     | DNA Res. 5 (5): 277-286 (1998)                      | 331                          | 789                          |
| 22 7 enzyme       | 37700.at | HG-U95A | X92108    | NM_000385 | NP_000377 | BLMH        | 17q11.2        |       | -2.1  |      |       |       |       | -2.5 olemycin hydrolase  | Cancer Res. 56:1746-1750 (1996)                     | 332                          | 790                          |
| 23 7 enzyme       | 37668.at | HG-U95A | U37519    | NM_000695 | NP_000688 | ALDH3B2     | 11q13          | -7.4  | -8.8  |      | -6.9  |       |       | -27.6 aldehyde dehydrogenase 3B2                                 | Adv. Exp. Med. Biol. 372:159-168 (1995)             | 333                          | 791                          |
| 24 7 enzyme       | 38285.at | HG-U95A | AF039397  | NM_001893 | NP_001879 | GRYM        | 16p13.11-p12.3 |       | -4.2  |      |       |       |       | -3.5 crystallin, mu  | Proc. Natl. Acad. Sci. U.S.A. 89:9292-9298 (1992)   | 334                          | 792                          |
| 25 7 enzyme       | 38790.at | HG-U95A | L25879    | NM_000120 | NP_000111 | EPHX1       | 10q21          | -3    | -3    |      | -3    |       |       | -5.1 epoxide hydrolase 1, microsomal (xenobiotic)                | Nucleic Acids Res. 15- (1987)                       | 335                          | 793                          |
| 26 7 enzyme       | 38008.at | HG-U95A | M13699    | NM_000096 | NP_000087 | CP          | 3q23-q25       |       | -3.6  | -2.6 | -3.8  |       |       | -6.2 ceruloplasmin (ferroxidase)                                 | Proc. Natl. Acad. Sci. U.S.A. 83:3257-3261 (1986)   | 336                          | 794                          |
| 27 7 enzyme       | 38317.at | HG-U95A | D88324    | NM_003570 | NP_003561 | GMAH        | 6p22-p23       | -2.2  | -4.4  |      | -7.4  |       |       | -14.4 cytidine monophosphate-N-acetylneuraminic acid hydroxylase | J. Biol. Chem. 270:16458-16463 (1995)               | 337                          | 795                          |
| 28 7 enzyme       | 40082.at | HG-U95A | D10040    | NM_021122 | NP_086945 | FACL2       | 4q34-q35       |       | -2.7  |      |       |       |       | -2.1 long-chain fatty acid-Coenzyme A ligase 2                   | J. Biochem. 111:123-128 (1992)                      | 338                          | 796                          |
| 29 7 enzyme       | 40522.at | HG-U95A | X59834    | NM_002065 | NP_002056 | GLUL        | 10q31          | -3.8  | -2.8  | -3   | -3.5  |       |       | -4.4 glutamate-aminotransferase (L-glutamine synthase)           | Unpublished   | 339                          | 797                          |
| 30 7 enzyme       | 40685.at | HG-U95A | M83772    | NM_006894 | NP_006825 | FMO3        | 1q23-q25       |       | -2.1  |      | -2.3  |       |       | -4.3 flavin containing monooxygenase 3                           | Proc. Natl. Acad. Sci. U.S.A. 89:1685-1689 (1992)   | 340                          | 798                          |
| 31 7 enzyme       | 770.at   | HG-U95A | D06542    | NM_002084 | NP_002075 | GPX3        | 5q23           |       | -3.2  | -6.5 | -6    |       |       | -2.8 plasma glutathione peroxidase 3 precursor                   | Arch. Biochem. Biophys. 256:677-686 (1987)          | 341                          | 799                          |

| Cat. category tag         | Probe ID  | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |      | lot 2 |       |       | title                             | reference                             | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|---------------------------|-----------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|------|-------|-------|-------|-----------------------------------|---------------------------------------|------------------------------|------------------------------|
|                           |           |         |           |           |           |             |              | Day 3 | Day 7 | IMM  | AI    | Day 3 | Day 7 |                                   |                                       |                              |                              |
| 32 8 hypothetical protein | 322151.at | HG-U95A | AB020685  | NM_014699 | NP_055714 | KIAA0378    | 5q15         |       |       | -3.4 | -2.3  |       |       | -2.7 KIAA0378 protein             | Unpublished                           | 342                          | 800                          |
| 33 8 hypothetical protein | 58400.at  | HG-U95A | AB028978  |           | BAA83007  | KIAA1055    | 15q24.1      |       |       | -3.3 |       |       |       | -3 KIAA1055 protein               | DNA Res. 6 (3): 197-205 (1999)        | 343                          | 801                          |
| 34 8 hypothetical protein | 38537.at  | HG-U95A | AB020650  | NM_014545 | NP_055760 | KIAA0943    | 5q33.1       | -2.2  | -2.3  | -2.6 | -2.1  |       |       | KIAA0943 protein                  | Unpublished                           | 344                          | 802                          |
| 35 8 hypothetical protein | 40943.at  | HG-U95A | AA008559  | NM_021080 | NP_016885 | LCE         | 4q23         |       |       | -2   |       |       |       | -3.7 hypothetical protein MGC5487 | J. Biol. Chem. 276:45358-45366 (2001) | 345                          | 803                          |

Table 22

| Cat. category | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |    | lot 2 |       |    | title | reference | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|---------------|----------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|----|-------|-------|----|-------|-----------|---------------------------------|---------------------------------|
|               |          |         |           |           |           |             |              | Day 3 | Day 7 | AI | Day 3 | Day 7 | AI |       |           |                                 |                                 |
| 36 10 kinase  | 1108_at  | HG-U95A | M18391    | NM_005232 | NP_005233 | EPHA1       | 7q32-q38     |       |       |    |       |       |    |       |           | 346                             | 804                             |
| 37 10 kinase  | 33804_at | HG-U95A | U43522    | NM_004103 | NP_004094 | PTK2B       | 6p21.1       |       |       |    |       |       |    |       |           | 347                             | 805                             |
| 38 10 kinase  | 36502_at | HG-U95A | AB020941  | NM_012395 | NP_038527 | PTK1        | 7q31-q22     |       |       |    |       |       |    |       |           | 348                             | 806                             |
| 39 10 kinase  | 36120_at | HG-U95A | AA224632  | NM_013233 | NP_037365 | STK38       | 2q24.3       |       |       |    |       |       |    |       |           | 349                             | 807                             |

| Cat. category        | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | lot 1 |       |    | lot 2 |       |    | title | reference | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|----------------------|----------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|----|-------|-------|----|-------|-----------|---------------------------------|---------------------------------|
|                      |          |         |           |           |           |             |              | Day 3 | Day 7 | AI | Day 3 | Day 7 | AI |       |           |                                 |                                 |
| 40 11 matrix protein | 36881_at | HG-U95A | X71129    | NM_001885 | NP_001876 | ETFB        | 19q13.3      |       |       |    |       |       |    |       |           | 350                             | 808                             |
| 41 11 matrix protein | 37600_at | HG-U95A | U68186    | NM_004425 | NP_004416 | ECM1        | 1q21         |       |       |    |       |       |    |       |           | 351                             | 809                             |

| Cat. category          | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location  | lot 1 |       |    | lot 2 |       |    | title | reference | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|------------------------|----------|---------|-----------|-----------|-----------|-------------|---------------|-------|-------|----|-------|-------|----|-------|-----------|---------------------------------|---------------------------------|
|                        |          |         |           |           |           |             |               | Day 3 | Day 7 | AI | Day 3 | Day 7 | AI |       |           |                                 |                                 |
| 42 12 membrane protein | 1042_at  | HG-U95A | U27185    | NM_002888 | NP_002879 | RARRES1     | 3q25.33       |       |       |    |       |       |    |       |           | 352                             | 811                             |
| 42 12 membrane protein | 33505_at | HG-U95A | A087421   | NM_002888 | NP_002879 | RARRES1     | 3q25.33       |       |       |    |       |       |    |       |           | 353                             | 811                             |
| 43 12 membrane protein | 33331_at | HG-U95A | U17077    | NM_005454 | NP_005425 | BENE        | 2q13          |       |       |    |       |       |    |       |           | 354                             | 812                             |
| 44 12 membrane protein | 33792_at | HG-U95A | AF043498  | NM_005672 | NP_005663 | PSGA        | 6p24.2        |       |       |    |       |       |    |       |           | 355                             | 813                             |
| 45 12 membrane protein | 34280_at | HG-U95A | Y09765    | NM_004861 | NP_004852 | GABRE       | Xq28          |       |       |    |       |       |    |       |           | 356                             | 814                             |
| 45 12 membrane protein | 34280_at | HG-U95A | U67784    | XM_051522 | XP_051522 | RDC1        | 2q37.3        |       |       |    |       |       |    |       |           | 357                             | 815                             |
| 47 12 membrane protein | 34898_at | HG-U95A | M30704    | NM_001657 | NP_001648 | AREG        | 4q13-q21      |       |       |    |       |       |    |       |           | 358                             | 817                             |
| 48 12 membrane protein | 38229_at | HG-U95A | AB024037  | NM_007083 | NP_006894 | VPR         | 2q11.1-q11.2  |       |       |    |       |       |    |       |           | 360                             | 818                             |
| 49 12 membrane protein | 38379_at | HG-U95A | X76534    | NM_002510 | NP_002501 | GNMB        | 7p15          |       |       |    |       |       |    |       |           | 361                             | 819                             |
| 50 12 membrane protein | 38750_at | HG-U95A | U97689    | NM_000435 | NP_000426 | NOTCH3      | 19p13.2-p13.1 |       |       |    |       |       |    |       |           | 362                             | 820                             |
| 51 12 membrane protein | 39310_at | HG-U95A | X86163    | NM_000623 | NP_000614 | BDKRB2      | 14q32.1-q32.2 |       |       |    |       |       |    |       |           | 363                             | 821                             |
| 52 12 membrane protein | 40990_at | HG-U95A | AF063389  | NM_005723 | NP_005714 | TSPAN-5     | 4q23          |       |       |    |       |       |    |       |           | 364                             | 822                             |

Table 23

| Cat. category tag | Probe ID | Chip    | accession | RefSeq    | gene symbol | map location | lot 1 |       |    | lot 2 |       |    | reference   | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|-------------------|----------|---------|-----------|-----------|-------------|--------------|-------|-------|----|-------|-------|----|---|------------------------------|------------------------------|
|                   |          |         |           |           |             |              | Day 3 | Day 7 | AI | Day 3 | Day 7 | AI |   |                              |                              |
| 53 13 metabolism  | 32246_at | HG-U95A | AJ238679  | NM_007183 | ANKA10      | 4q33         |       | -2.5  |    |       | -1.5  |    | Cancer Res. 56:3441-3445 (1998)                   | 387                          | 825                          |
| 54 13 metabolism  | 32464_at | HG-U95A | AF071215  | NM_004942 | DEFB2       | 6p23.1-p22   |       | -4.3  |    |       | -2.6  |    | Nature 387: (1997)                                | 358                          | 826                          |
| 55 13 metabolism  | 38496_at | HG-U95A | AF014398  | NM_014214 | MPA2        | 18p11.2      |       | -2.8  |    |       | -2.3  |    | Biochem. Biophys. Res. Commun. 251:111-116 (1998) | 359                          | 827                          |
| 56 13 metabolism  | 37350_at | HG-U95A | D17793    | NM_003730 | AKR1G3      | 10p15-p14    |       | -3.3  |    |       | -2.3  |    | Proc. Natl. Acad. Sci. U.S.A. 80:3183-3187 (1983) | 370                          | 828                          |
| 57 13 metabolism  | 37482_at | HG-U95A | U37100    | NM_000289 | AKR1B10     | 7q33         |       | -6.5  |    |       | -6.7  |    | J. Biol. Chem. 273 (19): 11429-11435 (1988)       | 371                          | 829                          |
| 58 13 metabolism  | 38766_at | HG-U95A | M94056    | NM_001444 | FABP5       | 8c21.13      |       | -4.2  |    |       | -3.7  |    | J. Invest. Dermatol. 95:299-305 (1992)            | 372                          | 830                          |

| Cat. category tag | Probe ID | Chip    | accession | RefSeq    | gene symbol | map location | lot 1 |       |    | lot 2 |       |    | reference              | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|-------------------|----------|---------|-----------|-----------|-------------|--------------|-------|-------|----|-------|-------|----|------------------------|------------------------------|------------------------------|
|                   |          |         |           |           |             |              | Day 3 | Day 7 | AI | Day 3 | Day 7 | AI |                        |                              |                              |
| 59 14 MHC         | 38095_at | HG-U95A | M83664    | NM_002121 | HLA-DPB1    | 6p21.3       |       | -4.4  |    |       | -2.3  |    | Cell 38:241-249 (1984) | 373                          | 831                          |
| 59 14 MHC         | 38096_at | HG-U95A | M83664    | NM_002121 | HLA-DPB1    | 6p21.3       |       | -2.6  |    |       | -3.3  |    | Cell 38:241-249 (1984) | 373                          | 831                          |

| Cat. category tag | Probe ID | Chip    | accession | RefSeq    | gene symbol | map location  | lot 1 |       |    | lot 2 |       |    | reference                             | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|-------------------|----------|---------|-----------|-----------|-------------|---------------|-------|-------|----|-------|-------|----|---------------------------------------|------------------------------|------------------------------|
|                   |          |         |           |           |             |               | Day 3 | Day 7 | AI | Day 3 | Day 7 | AI |                                       |                              |                              |
| 60 15 MMP related | 1006_at  | HG-U95A | X07820    | NM_002425 | MMP10       | 11q22.3       |       | -6.3  |    |       | -30.3 |    | Biochem. J. 253:187-192 (1988)        | 374                          | 832                          |
| 61 15 MMP related | 31859_at | HG-U95A | J05070    | NM_004394 | MMP9        | 20q11.2-q13.1 |       | -25.5 |    |       | -18   |    | J. Biol. Chem. 264:17213-17221 (1989) | 375                          | 833                          |

| Cat. category tag | Probe ID | Chip    | accession | RefSeq    | gene symbol | map location  | lot 1 |       |    | lot 2 |       |    | reference   | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|-------------------|----------|---------|-----------|-----------|-------------|---------------|-------|-------|----|-------|-------|----|---|------------------------------|------------------------------|
|                   |          |         |           |           |             |               | Day 3 | Day 7 | AI | Day 3 | Day 7 | AI |   |                              |                              |
| 62 16 oncogenesis | 1915_at  | HG-U95A | V01512    | NM_005232 | c-fos       | 14q24.3       |       | -2    |    |       | -4.3  |    | Proc. Natl. Acad. Sci. U.S.A. 80:3183-3187 (1983) | 376                          | 834                          |
| 62 16 oncogenesis | 1916_at  | HG-U95A | V01512    | NM_005232 | c-fos       | 14q24.3       |       | -2.2  |    |       | -2.6  |    | Proc. Natl. Acad. Sci. U.S.A. 80:3183-3187 (1983) | 376                          | 834                          |
| 63 16 oncogenesis | 36933_at | HG-U95A | D87653    | NM_006086 | NDRG1       | 8q24          |       | -4.9  |    |       | -2.3  |    | J. Biol. Chem. 271:9-29055 (1995)                 | 377                          | 835                          |
| 64 16 oncogenesis | 37283_at | HG-U95A | X82209    | NM_002430 | MN1         | 22q12.1       |       |       |    |       | -3.2  |    | Oncogene 10:1521-1528 (1995)                      | 378                          | 836                          |
| 65 16 oncogenesis | 37821_at | HG-U95A | AF041260  | NM_003657 | BCAS1       | 20q13.2-q13.3 |       | -3.7  |    |       | -4.6  |    | Cancer Res. 56:3441-3445 (1996)                   | 379                          | 837                          |
| 66 16 oncogenesis | 38827_at | HG-U95A | AF038451  | NM_006408 | AGR2        | 7p21.3        |       | -2.7  |    |       | -3.7  |    | Biochem. Biophys. Res. Commun. 251:111-116 (1989) | 380                          | 838                          |

Table 24

| Cat. category tag | Probe ID | Chip    | accession | RefSeq    | gene symbol | map location  | Day 3 |      | Day 7 |      | title | reference  | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|-------------------|----------|---------|-----------|-----------|-------------|---------------|-------|------|-------|------|-------|--|---------------------------------|---------------------------------|
|                   |          |         |           |           |             |               | AI    | IMM  | AI    | IMM  |       |  |                                 |                                 |
| 67 17 others      | 1230_at  | HG-U95A | U78558    | NM_006687 | GRA         | 1q12-q21      | -2.3  | -2   | -3.4  | -2   | -3.4  | Unpublished  | 381                             | 839                             |
| 68 17 others      | 32527_at | HG-U95A | A381790   | NM_006823 | APW2        | 10q23.2       | -2.1  | -3.8 | -6.2  | -2.7 | -3.8  | Unpublished  | 382                             | 840                             |
| 69 17 others      | 32817_at | HG-U95A | AL096881  | NM_012423 | SEC14L2     | 22q12.2       | -2.1  | -2.9 | -6.9  | -2.9 | -6.9  | SEC14 (S. cerevisiae)-like 2                             | 383                             | 841                             |
| 70 17 others      | 38151_at | HG-U95A | AF020572  | NM_014822 | LOH1OR2A    | 11q23         | -2.1  | -3.2 | -6.2  | -2.7 | -3.2  | loss of heterozygosity, 11q chromosomal region 2, (1997) | 384                             | 842                             |
| 71 17 others      | 38803_at | HG-U95A | AF052142  | NM_032041 | NCALD       | 8q22-q23      | -2.8  | -2.8 | -6.2  | -2.8 | -6.2  | gene A   | 385                             | 843                             |
| 72 17 others      | 38827_at | HG-U95A | AA522530  | NM_019058 | RTP801      | 10pter-q26.12 | -2    | -2   | -6.2  | -2.3 | -2.4  | RTP801   | 386                             | 844                             |
| 73 17 others      | 41841_at | HG-U95A | AJ223603  | NM_014400 | C4.4A       | 18q13.32      | -2.5  | -2.5 | -6.2  | -2.5 | -6.2  | GFP-anchored metastasis-associated protein homolog       | 387                             | 845                             |

| Cat. category tag | Probe ID  | Chip    | accession | RefSeq    | gene symbol | map location | Day 3 |      | Day 7 |      | title | reference   | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|-------------------|-----------|---------|-----------|-----------|-------------|--------------|-------|------|-------|------|-------|---|---------------------------------|---------------------------------|
|                   |           |         |           |           |             |              | AI    | IMM  | AI    | IMM  |       |   |                                 |                                 |
| 74 18 P450        | 1371_s_at | HG-U95A | M29874    | NM_000767 | CYP2B6      | 18q13.2      | -7.1  | -3.4 | -8.2  | -1.3 | -3.4  | cytochrome P450, subfamily IIIB (phenobarbital-inducible) | 388                             | 846                             |
| 75 18 P450        | 371241_at | HG-U95A | J04813    | NM_000777 | CYP3A5      | 7q21.1       | -2.5  | -5.2 | -6.2  | -5.2 | -6.2  | cytochrome P450, subfamily IIIA, polypeptide 5            | 389                             | 847                             |
| 75 18 P450        | 371231_at | HG-U95A | J04813    | NM_000777 | CYP3A5      | 7q21.1       | -2.1  | -4.5 | -6.2  | -4.5 | -6.2  | cytochrome P450, subfamily IIIA, polypeptide 5            | 389                             | 847                             |

| Cat. category tag | Probe ID | Chip    | accession | RefSeq    | gene symbol | map location | Day 3 |      | Day 7 |      | title | reference   | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|-------------------|----------|---------|-----------|-----------|-------------|--------------|-------|------|-------|------|-------|---|---------------------------------|---------------------------------|
|                   |          |         |           |           |             |              | AI    | IMM  | AI    | IMM  |       |   |                                 |                                 |
| 76 18 phosphatase | 1005_at  | HG-U95A | K8277     | NM_004417 | DUSP1       | 5q34         | -2.8  | -2.4 | -4.3  | -2.8 | -4.3  | dual specificity phosphatase 1                              | 390                             | 848                             |
| 77 18 phosphatase | 1384_at  | HG-U95A | M63426    | NM_002851 | PTPR21      | 7q31.3       | -3.7  | -4.3 | -6.2  | -4.3 | -6.2  | protein tyrosine phosphatase, receptor-type 2 polypeptide 1 | 391                             | 849                             |

| Cat. category tag             | Probe ID | Chip    | accession | RefSeq    | gene symbol | map location | Day 3 |      | Day 7 |       | title | reference                                    | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|-------------------------------|----------|---------|-----------|-----------|-------------|--------------|-------|------|-------|-------|-------|--|---------------------------------|---------------------------------|
|                               |          |         |           |           |             |              | AI    | IMM  | AI    | IMM   |       |  |                                 |                                 |
| 78 20 protein binding protein | 1386_at  | HG-U95A | M35878    | NM_000598 | IGFBP3      | 7p13-p12     | -2.4  | -2.4 | -3.1  | -2.8  | -3.1  | insulin-like growth factor binding protein 3 | 392                             | 850                             |
| 78 20 protein binding protein | 37319_at | HG-U95A | M35878    | NM_000598 | IGFBP3      | 7p13-p12     | -2.7  | -2.7 | -3.1  | -3.1  | -3.1  | insulin-like growth factor binding protein 3 | 392                             | 850                             |
| 79 20 protein binding protein | 1736_at  | HG-U95A | M62402    | NM_002178 | IGFBP6      | 12q13        | -3.6  | -2.8 | -7.1  | -5.4  | -7.1  | insulin-like growth factor binding protein 6 | 393                             | 851                             |
| 80 20 protein binding protein | 32149_at | HG-U95A | AA532485  | NM_002443 | MSMB        | 10q11.2      | -8.6  | -3.7 | -11.7 | -21.9 | -11.7 | microsomal protein, beta-                    | 394                             | 852                             |

Table 25

| Cat. category    | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | Set 1 |       |    | Set 2 |       |      | title             | reference                       | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|------------------|----------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|----|-------|-------|------|-------------------|---------------------------------|------------------------------|------------------------------|
|                  |          |         |           |           |           |             |              | Day 3 | Day 7 | AI | Day 3 | Day 7 | AI   |                   |                                 |                              |                              |
| 81 21 proteinase | 40717_at | HG-U95A | AB001928  | NM_001333 | NP_001324 | CYS2        | 9q22.2       | -2.8  | -2.2  |    |       |       | -3.2 | -5.6 cathepsin L2 | Cancer Res. 56:1624-1630 (1998) | 396                          | 854                          |

| Cat. category              | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | Set 1 |       |       | Set 2 |       |       | title   | reference   | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|----------------------------|----------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|-------|-------|-------|-------|---|---|------------------------------|------------------------------|
|                            |          |         |           |           |           |             |              | Day 3 | Day 7 | AI    | Day 3 | Day 7 | AI    |   |   |                              |                              |
| 82 22 proteinase inhibitor | 33305_at | HG-U95A | M83058    | NM_030466 | NP_109591 | SERPINF1    | 6p25         |       | -2.3  | -2.1  |       |       |       | serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 1                                    | Proc. Natl. Acad. Sci. U.S.A. 89:5635-5639 (1992) | 397                          | 855                          |
| 83 22 proteinase inhibitor | 33825_at | HG-U95A | X68733    | NM_001085 | NP_001076 | SERPINA3    | 14q32.1      |       | -3.8  | -14.1 |       | -5.8  | -7    | serine (or cysteine) proteinase inhibitor, clade A (alpha-1 antitrypsin), member 3                          | Biochem. Biophys. Res. Commun. 111:438-443 (1983) | 398                          | 856                          |
| 84 22 proteinase inhibitor | 38125_at | HG-U95A | M14083    | NM_006502 | NP_006593 | SERPINE1    | 7q21.3-q22   | -6.8  | -4.2  | -18.3 | -20.1 | -11.2 | -11   | serine (or cysteine) proteinase inhibitor, clade E (neut, plasminogen activator inhibitor type 1), member 1 | Proc. Natl. Acad. Sci. U.S.A. 83:6776-6780 (1986) | 399                          | 857                          |
| 84 22 proteinase inhibitor | 672_at   | HG-U95A | J03764    | NM_005602 | NP_005593 | SERPINE1    | 7q21.3-q22   | -12   | -7.7  | -7.8  | -31.3 | -62.1 | -34.4 | serine (or cysteine) proteinase inhibitor, clade E (neut, plasminogen activator inhibitor type 1), member 1 | Proc. Natl. Acad. Sci. U.S.A. 83:6776-6780 (1986) | 399                          | 857                          |
| 85 22 proteinase inhibitor | 862_at   | HG-U95A | U04313    | NM_002639 | NP_002630 | SERPUB5     | 16q21.3      | -2.2  | -2.2  |       | -2.2  | -2.5  | -2.2  | serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 5                                    | Science 263:326-328 (1994)                        | 400                          | 858                          |

| Cat. category | Probe ID | Chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | Set 1 |       |      | Set 2 |       |    | title                           | reference                 | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|---------------|----------|---------|-----------|-----------|-----------|-------------|--------------|-------|-------|------|-------|-------|----|---------------------------------|---------------------------|------------------------------|------------------------------|
|               |          |         |           |           |           |             |              | Day 3 | Day 7 | AI   | Day 3 | Day 7 | AI |                                 |                           |                              |                              |
| 86 23 S100    | 41096_at | HG-U95A | AU26134   | NM_002964 | NP_002955 | S100A8      | 1q21         | -5.4  |       | -6.2 |       |       | -3 | S100 calcium-binding protein A8 | Nature 326:614-617 (1987) | 401                          | 859                          |



Table 26

| Cat. category             | Probe ID | Chip    | Accession | RefSeq    | Gene symbol | Map location  | lot 1 |       |      |       | lot 2 |       |       |       | Title  | Reference   | SEQ ID NO. (nucleotide seq.) | SEQ ID NO. (amino acid seq.) |
|---------------------------|----------|---------|-----------|-----------|-------------|---------------|-------|-------|------|-------|-------|-------|-------|-------|--|---|------------------------------|------------------------------|
|                           |          |         |           |           |             |               | Day 3 | Day 7 | IMM  | AI    | Day 3 | Day 7 | IMM   | AI    |  |   |                              |                              |
| 87 24 signal transduction | 1057_at  | HC-U95A | M87815    | NP_001809 | CRABP-II    | 1q21.3        | -4.6  | -5.4  | -2.7 | -4.7  | -12.7 | -12.7 | -12.7 | -12.7 | Human retinoic acid-binding protein II (CRABP-II) gene exons 2-4, complete cds | J. Biol. Chem. 266:17682-17686 (1991)             | 402                          | 865                          |
| 87 24 signal transduction | 41783_at | HC-U95A | M87815    | NP_001809 | CRABP-II    | 1q21.3        |       | -8.8  |      |       | -3.4  | -11.3 |       |       | Human retinoic acid-binding protein II (CRABP-II) gene exons 2-4, complete cds | J. Biol. Chem. 266:17682-17686 (1991)             | 402                          | 865                          |
| 88 24 signal transduction | 35632_at | HC-U95A | U28710    | NP_004342 | CELB        | 3q13.11       |       | -2    |      |       | -2    | -2    |       |       | Oncogene 102387-2317   | Oncogene 102387-2317 (1995)                       | 403                          | 861                          |
| 88 24 signal transduction | 514_at   | HC-U95A | U28710    | NP_004342 | CELB        | 3q13.11       |       | -4.2  | -2.4 | -4.6  | -3.2  | -3.2  |       |       | Oncogene 102387-2317   | Oncogene 102387-2317 (1995)                       | 403                          | 861                          |
| 89 24 signal transduction | 36524_at | HC-U95A | AB028035  | NP_058135 | ARHGAP4     | 2q22          | -3.5  | -4.1  | -2.2 |       | -8.6  | -8.6  |       |       | Rho guanine nucleotide exchange factor 4, isoform a NM_032995 Rho              | Biochem. Biophys. Res. Commun. 273:384-389 (2000) | 404, 405                     | 862, 863                     |
| 90 24 signal transduction | 39220_at | HC-U95A | T82248    | NP_003348 | UCB         | 11q12.3-q13.1 | -6    | -28.1 | -8.2 | -17.8 | -62.8 | -62.8 |       |       | Human Mol. Genet. 1:371-378 (1992)   | Hum. Mol. Genet. 1:371-378 (1992)                 | 406                          | 864                          |
| 91 24 signal transduction | 1778_at  | HC-U95A | L36483    | NP_004282 | RNT1        | 11q13.1       |       | -2.1  |      |       | -7.5  | -7.5  |       |       | ras inhibitor  | Nature 315:689-689 (1995)                         | 407                          | 865                          |
| 92 24 signal transduction | 1834_at  | HC-U95A | X94216    | NP_005420 | VEGFC       | 4q34.1-q34.3  |       | -2.4  |      |       | -2.5  | -4.3  |       |       | vascular endothelial growth factor C   | EMBO J. 15:290-298 (1996)                         | 408                          | 866                          |
| 93 24 signal transduction | 32737_at | HC-U95A | M84595    | NP_002863 | RAC2        | 22q13.1       | -4.3  | -3.5  | -4.9 | -3.2  | -17.4 | -17.4 |       |       | ras-related G3 binding protein subunit 2                                       | J. Biol. Chem. 264:16378-16382 (1989)             | 409                          | 867                          |

| Cat. category             | Probe ID | Chip    | Accession | RefSeq    | Gene symbol | Map location | lot 1 |       |      |      | lot 2 |       |     |    | Title                                    | Reference                           | SEQ ID NO. (nucleotide seq.) | SEQ ID NO. (amino acid seq.) |
|---------------------------|----------|---------|-----------|-----------|-------------|--------------|-------|-------|------|------|-------|-------|-----|----|--|-------------------------------------|------------------------------|------------------------------|
|                           |          |         |           |           |             |              | Day 3 | Day 7 | IMM  | AI   | Day 3 | Day 7 | IMM | AI |  |                                     |                              |                              |
| 94 25 structural protein  | 34091_at | HC-U95A | Z19554    | NP_003371 | VIM         | 10p13        | -3.4  | -3.2  | -9.4 | -9.0 | -3.1  | -11.6 |     |    | vimentin                                 | Mol. Cell. Biol. 9:3014-3020 (1989) | 410                          | 868                          |
| 95 25 structural protein  | 38113_at | HC-U95A | AJ01712   | NP_002274 | TNNT1       | 19q13.4      |       | -5.5  | -4.9 |      | -12.2 | -12.2 |     |    | tropomyosin T1, skeletal slow            | Unpublished                         | 411                          | 869                          |
| 96 25 structural protein  | 38355_at | HC-U95A | M13503    | NP_005338 | TYL         | 1q21         | -6.8  | -8.4  | -3.7 | -4.3 | -3.8  | -10.6 |     |    | involucrin                               | Cell 48:585-589 (1988)              | 412                          | 870                          |
| 97 25 structural protein  | 38790_at | HC-U95A | M19267    | NP_000357 | TPM1        | 15q22.1      | -2.9  | -3.3  | -5.5 | -5.4 | -4.8  | -10.6 |     |    | tropomyosin 1 (alpha)                    | Mol. Cell. Biol. 8:160-168 (1988)   | 413                          | 871                          |
| 97 25 structural protein  | 36791_at | HC-U95A | M19267    | NP_000357 | TPM1        | 15q22.1      | -2.5  | -2.2  | -3.2 | -7.5 | -3.5  | -6.3  |     |    | tropomyosin 1 (alpha)                    | Mol. Cell. Biol. 8:160-168 (1988)   | 413                          | 871                          |
| 97 25 structural protein  | 36782_at | HC-U95A | Z24727    | NP_000357 | TPM1        | 15q22.1      | -2.6  | -3.8  | -5.7 | -5   | -6.3  | -10.6 |     |    | tropomyosin 1 (alpha)                    | Mol. Cell. Biol. 8:160-168 (1988)   | 413                          | 871                          |
| 98 25 structural protein  | 37160_at | HC-U95A | M18688    | NP_003125 | SPRR1B      | 1q21-q22     |       | -2.1  |      |      | -2.8  | -2.8  |     |    | small proline-rich protein 1B (cornalin) | Mol. Cell. Biol. 8:2195-2203 (1988) | 414                          | 872                          |
| 98 25 structural protein  | 37582_at | HC-U95A | X07896    | NP_002266 | KRT15       | 17q21        | -5.2  | -2.6  | -2   | -2.7 |       |       |     |    | keratin 15                               | J. Cell Biol. 106:1249-1261 (1988)  | 415                          | 873                          |
| 100 25 structural protein | 39569_at | HC-U95A | U72848    | NP_001879 | EVPK        | 17q25        |       | -2    |      |      | -2.7  | -2.7  |     |    | emoplasin                                | J. Cell Biol. 134:715-729 (1995)    | 416                          | 874                          |

Table 27

| Cat. category | Probe ID                | Chip     | accession | RefSeq   | RefSeq    | gene symbol | map location | Iset 1 |       |      | Iset 2 |       |      | title  | reference   | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|---------------|-------------------------|----------|-----------|----------|-----------|-------------|--------------|--------|-------|------|--------|-------|------|--|---|---------------------------------|---------------------------------|
|               |                         |          |           |          |           |             |              | Day 3  | Day 7 | AI   | Day 3  | Day 7 | AI   |  |   |                                 |                                 |
| 101           | 26 transcription factor | 1452_at  | HG-U95A   | U24576   | NM_006789 | LMO4        | 1p22.3       | -2.5   | -2.7  | -2.1 | -2.4   | -2.7  | -2.1 | -3.5 UM domain only 4  | Proc. Natl. Acad. Sci. U.S.A. 95:11257-11262 (1998) | 417                             | 875                             |
| 102           | 26 transcription factor | 35430_at | HG-U95A   | D15050   | NM_003751 | TCF8        | 10p11.2      | -2.5   | -3.3  | -2.1 | -2.4   | -2.7  | -2.1 | ion factor 8 (represses interferon- $\gamma$ expression)               | Science 254:1781-1784 (1991)                        | 418                             | 876                             |
| 103           | 26 transcription factor | 34216_at | HG-U95A   | AA478904 | NM_003709 | KLF7        | 2q34         | -2.5   | -3.3  | -2.1 | -2.4   | -2.7  | -2.1 | Kruppel-like factor 7 (ubiquitous)                                     | J. Biol. Chem. 273:28228-28237 (1998)               | 419                             | 877                             |
| 104           | 26 transcription factor | 35425_at | HG-U95A   | AJ743512 | NM_003638 | BARX2       | 11c25        | -3.1   | -2.4  | -2.1 | -2.4   | -2.7  | -2.5 | BarX-like homeobox 2   | Proc. Natl. Acad. Sci. U.S.A. 94:2632-2637 (1997)   | 420                             | 878                             |
| 105           | 26 transcription factor | 38619_at | HG-U95A   | S78825   | NM_002165 | ID1         | 20q11        | -2.4   | -2.4  | -2.1 | -2.4   | -2.7  | -2.5 | inhibitor of DNA binding 1, dominant negative helix-loop-helix protein | J. Biol. Chem. 268:2138-2145 (1994)                 | 421                             | 879                             |
| 106           | 26 transcription factor | 41246_at | HG-U95A   | A1743134 | NM_005868 | TNRC3       | 4q28.3       | -2.9   | -2.9  | -2.1 | -2.4   | -2.7  | -2.5 | uncoupling protein 3, containing 3                                     | Hum. Genet. 100 (1): 114-122 (1997)                 | 422                             | 880                             |

| Cat. category | Probe ID       | Chip     | accession | RefSeq   | RefSeq    | gene symbol | map location  | Iset 1 |       |      | Iset 2 |       |      | title  | reference   | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|---------------|----------------|----------|-----------|----------|-----------|-------------|---------------|--------|-------|------|--------|-------|------|--|---|---------------------------------|---------------------------------|
|               |                |          |           |          |           |             |               | Day 3  | Day 7 | AI   | Day 3  | Day 7 | AI   |  |   |                                 |                                 |
| 107           | 27 transporter | 1832_at  | HG-U95A   | U83861   | NM_005688 | ABCC5       | 3q27          | -3.6   | -3.6  | -2.1 | -2.4   | -2.7  | -2.1 | -5 ATP-binding cassette, sub-family C, member 5      | Hum. Mol. Genet. 5:1849-1853 (1996)                 | 423                             | 881                             |
| 108           | 27 transporter | 32531_at | HG-U95A   | X52847   | NM_000165 | GJA1        | 6q27-22.1     | -4.4   | -8.8  | -5.5 | -6.8   | -5.1  | -4.2 | connexin 43  | J. Cell Biol. 111:589-598 (1990)                    | 424                             | 882                             |
| 109           | 27 transporter | 32809_at | HG-U95A   | U46569   | NM_001851 | AQP5        | 12c13         | -4.3   | -3.1  | -3.4 | -2.5   | -5.1  | -4.2 | Aquaporin-5  | J. Biol. Chem. 271:8569-8574 (1996)                 | 425                             | 883                             |
| 110           | 27 transporter | 37591_at | HG-U95A   | U94592   | NM_003335 | UCP2        | 11c13         | -2.3   | -12.7 | -2.3 | -2.3   | -2.7  | -2.5 | uncoupling protein 2                                 | Nat. Genet. 15:269-272 (1997)                       | 426                             | 884                             |
| 111           | 27 transporter | 38682_at | HG-U95A   | X87158   | NM_000338 | SCNN1B      | 16p12.2-17p11 | -7.6   | -7.6  | -2.1 | -2.4   | -2.7  | -2.5 | sodium channel, nonvoltage-gated 1, beta             | Genomics 28:540-545 (1995)                          | 427                             | 885                             |
| 112           | 27 transporter | 40297_at | HG-U95A   | AC005053 | NM_012449 | STEAP       | 7q21          | -2.2   | -2.3  | -2.1 | -2.4   | -2.7  | -2.5 | six transmembrane epithelial antigen of the prostate | Proc. Natl. Acad. Sci. U.S.A. 96:14523-14528 (1999) | 428                             | 886                             |
| 113           | 27 transporter | 40339_at | HG-U95A   | U95387   | NM_014211 | GABRP       | 5q33-q34      | -2.2   | -2.2  | -2.1 | -2.4   | -2.7  | -2.5 | gamma-aminobutyric acid (GABA) A receptor            | J. Biol. Chem. 272:15346-15350 (1997)               | 429                             | 887                             |

| Cat. category | Probe ID | Chip     | accession | RefSeq   | RefSeq | gene symbol | map location | Iset 1 |       |      | Iset 2 |       |      | title           | reference                              | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|---------------|----------|----------|-----------|----------|--------|-------------|--------------|--------|-------|------|--------|-------|------|-----------------|--|---------------------------------|---------------------------------|
|               |          |          |           |          |        |             |              | Day 3  | Day 7 | AI   | Day 3  | Day 7 | AI   |                 |  |                                 |                                 |
| 114           |          | 33546_at | HG-U95A   | A192384  | -      | -           | -            | -3.2   | -4.6  | -2.1 | -2.4   | -2.7  | -2.1 | -4.4 cDNA clone | -                                      | 430                             | -                               |
| 115           |          | 38202_at | HG-U95A   | AF052107 | -      | -           | -            | -2.5   | -4.1  | -2.1 | -2.4   | -2.7  | -2.1 | IMAGE2448791    | Anal. Biochem. 238 (1): 107-113 (1998) | 431                             | -                               |
| 116           |          | 40191_at | HG-U95A   | A1781647 | -      | -           | -            | -2.5   | -4.1  | -2.1 | -2.4   | -2.7  | -2.1 | -4.3 cDNA clone | -                                      | 432                             | -                               |

Table 28

| Cat. category tag | Probe ID               | Chip    | Accession | RefSeq    | RefSeq    | Gene symbol   | Map location  | lot 1 |       |       | lot 2 |       |       | Title   | SEQ ID NO: (nucleotide seq.)           | SEQ ID NO: (amino acid seq.) |
|-------------------|------------------------|---------|-----------|-----------|-----------|---------------|---------------|-------|-------|-------|-------|-------|-------|---|--|------------------------------|
|                   |                        |         |           |           |           |               |               | Day 1 | Day 3 | Day 7 | Day 1 | Day 3 | Day 7 |   |  |                              |
| 1                 | 2 cell adhesion        | HG-U95B | AA130221  | NM_001941 | NP_001932 | DSC3a, b      | 18q12.1       | AI    | IMM   | AI    | IMM   | AI    | AI    | reference                                       | Genomics 10640-645 (1991)              | 433, 434, 888, 889           |
|                   |                        |         |           |           |           |               |               | -2.4  | -2.6  | -2.8  | -3.4  | -2.2  | -2.7  |   |  |                              |
| 1                 | 2 cell adhesion        | HG-U95B | AA186613  | NM_001941 | NP_001932 | DSC3a, b      | 18q12.1       |       |       |       | -2.4  | -4    | -2.4  | Genomics 10640-645 (1991)                       | 433, 434, 888, 889                     |                              |
|                   |                        |         |           |           |           |               |               |       |       |       |       |       |       |   |  |                              |
| 2                 | Cytokine related       | HG-U95B | AA470014  | NM_014432 | NP_055247 | IL20RA        | 16q22.33-33.1 | AI    | IMM   | AI    | IMM   | AI    | AI    | reference                                       | J. Biol. Chem. 271:531335-31339 (2000) | 435, 890                     |
|                   |                        |         |           |           |           |               |               |       |       | -2.1  |       |       | -2.9  |   |  |                              |
| 3                 | 7 enzyme               | HG-U95B | AA393727  | NM_000408 | NP_000399 | GPD2          | 2q24.1        | AI    | IMM   | AI    | IMM   | AI    | AI    | reference                                       | Gene 150 (2), 417-418 (1994)           | 436, 891                     |
|                   |                        |         |           |           |           |               |               |       |       | -2    |       |       | -2.8  |   |  |                              |
| 4                 | 7 enzyme               | HG-U95B | AA133869  | NM_004776 | NP_004767 | BAGAL75       | 20q12.1-q13.2 | AI    | IMM   | AI    | IMM   | AI    | AI    | Proc. Natl. Acad. Sci. U.S.A. 95:472-477 (1998) | 437, 892                               |                              |
|                   |                        |         |           |           |           |               |               |       |       | -2.2  |       |       | -2.2  |   |  |                              |
| 5                 | 7 enzyme               | HG-U95B | AA119811  | NM_000847 | NP_000838 | GSTA3         | 9p12          | AI    | IMM   | AI    | IMM   | AI    | AI    | Genomics 18680-686 (1993)                       | 438, 893                               |                              |
|                   |                        |         |           |           |           |               |               |       |       | -4.6  |       |       | -5.3  |   |  |                              |
| 6                 | 8 hypothetical protein | HG-U95B | AA780170  | NM_022369 | NP_017164 | FLJ12541      | 15q33.33      | AI    | IMM   | AI    | IMM   | AI    | AI    | reference                                       | Unpublished                            | 439, 894                     |
|                   |                        |         |           |           |           |               |               |       |       | -10.1 |       |       | -3.8  |   |  |                              |
| 7                 | 8 hypothetical protein | HG-U95B | AA618602  | NM_018058 | NP_061931 | FLJ20590      | 10pter-q26.12 | AI    | IMM   | AI    | IMM   | AI    | AI    | Mol. Cell. Biol. 22:2283-2293 (2002)            | 440, 895                               |                              |
|                   |                        |         |           |           |           |               |               |       |       | -2.1  |       |       | -2.4  |   |  |                              |
| 8                 | 8 hypothetical protein | HG-U95B | AA039400  | NM_017803 | NP_060076 | DKFZp434K1210 | 8p21.1        | AI    | IMM   | AI    | IMM   | AI    | AI    | Unpublished                                     | 441, 896                               |                              |
|                   |                        |         |           |           |           |               |               |       |       | -4.4  |       |       | -2.9  |   |  |                              |
| 9                 | 8 hypothetical protein | HG-U95B | AA133356  | NM_016463 | NP_057547 | HSPC185       | 5q31.3        | AI    | IMM   | AI    | IMM   | AI    | AI    | Genome Res. 10:1546-1560 (2000)                 | 442, 897                               |                              |
|                   |                        |         |           |           |           |               |               |       |       | -2.5  |       |       | -2    |   |  |                              |
| 10                | 8 hypothetical protein | HG-U95B | AA971271  | NM_024895 | NP_078172 | FLJ23309      | 9p24          | AI    | IMM   | AI    | IMM   | AI    | AI    | Unpublished                                     | 443, 898                               |                              |
|                   |                        |         |           |           |           |               |               |       |       | -2    |       |       | -2.4  |   |  |                              |
| 11                | 8 hypothetical protein | HG-U95B | AA65799   | NM_024090 | NP_076995 | LOE           | 4q25          | AI    | IMM   | AI    | IMM   | AI    | AI    | J. Biol. Chem. 276:45358-45366 (2001)           | 444, 899                               |                              |
|                   |                        |         |           |           |           |               |               |       |       | -2.1  |       |       | -2.6  |   |  |                              |
| 12                | 8 hypothetical protein | HG-U95B | AA824107  | NM_022230 | NP_115706 | MGC12536      | 16q12.2       | AI    | IMM   | AI    | IMM   | AI    | AI    | Biochem. J. 362:383-388 (2002)                  | 445, 900                               |                              |
|                   |                        |         |           |           |           |               |               |       |       | -2.1  |       |       | -4.2  |   |  |                              |
| 13                | 8 hypothetical protein | HG-U95B | AA509980  | NM_024539 | NP_078815 | FLJ23516      | Xq22.2        | AI    | IMM   | AI    | IMM   | AI    | AI    | Unpublished                                     | 446, 901                               |                              |
|                   |                        |         |           |           |           |               |               |       |       | -4.1  |       |       | -5.4  |   |  |                              |
| 14                | 8 hypothetical protein | HG-U95B | AA873182  | NM_018192 | NP_060682 | FLJ10718      | 3q28          | AI    | IMM   | AI    | IMM   | AI    | AI    | Unpublished                                     | 447, 902                               |                              |
|                   |                        |         |           |           |           |               |               |       |       | -3.8  |       |       | -5.5  |   |  |                              |

Table 29

|    |   |                      |          |         |          |           |           |          |         |      |      |       |       |       |   |                                   |             |     |     |
|----|---|----------------------|----------|---------|----------|-----------|-----------|----------|---------|------|------|-------|-------|-------|---|-----------------------------------|-------------|-----|-----|
| 15 | 8 | hypothetical protein | 54090_at | HG-U95B | AJ798818 | NM_017782 | NP_060282 | FLJ20373 | Zc11.2  | -2.1 |      | -2.1  | -2.1  | -2.4  | -1.7  | hypothetical protein<br>FLJ20373  | Unpublished | 448 | 903 |
| 16 | 8 | hypothetical protein | 55924_at | HG-U95B | AA085776 | NM_032899 | NP_116288 | MGC14128 | 8a24.13 | -2.6 | -5.1 | -2.7  | -3.3  | -4.1  | -4.1  | hypothetical protein<br>MGC14128  | Unpublished | 449 | 904 |
| 17 | 8 | hypothetical protein | 57777_at | HG-U95B | AI536871 | NM_018584 | NP_061054 | PRO1489  | 1p38.13 | -2.1 | -3.4 | -10.9 | -3.3  | -4.5  | -4.5  | hypothetical protein<br>PRO1489   | Unpublished | 450 | 905 |
| 18 | 8 | hypothetical protein | 42472_at | HG-U95B | N71183   |           |           |          |         | -2.4 | -2.3 | -2.1  | -2.2  | -3    | Homo sapiens cDNA<br>FLJ11871 fs. clone<br>HEMB1001208  | Genome Res. 6 (9): 807-28<br>1999 | 451         | -   |     |
| 19 | 8 | hypothetical protein | 43412_at | HG-U95B | AA522152 |           |           | MGC16207 | 11q23.3 |      |      | -2.6  |       | -2.8  | hypothetical protein<br>MGC16207  | unpublished                       | 452         | -   |     |
| 20 | 8 | hypothetical protein | 48104_at | HG-U95B | AA772055 |           |           |          |         | -5.4 | -3   | -2.7  | -15.1 | -15.1 | Homo sapiens mRNA: cDNA<br>DKFZ434H1235 (from clone<br>DKFZ434H1235; partial cds)   | -                                 | 453         | -   |     |
| 21 | 8 | hypothetical protein | 48293_at | HG-U95B | AA059445 |           |           |          |         | -3.9 | -3.7 | -4.5  | -11.7 | -4.5  | Homo sapiens cDNA<br>FLJ31097 fs. clone<br>IMR32100210  | Genome Res. 6 (9): 807-28<br>1999 | 454         | -   |     |
| 22 | 8 | hypothetical protein | 46700_at | HG-U95B | W55958   |           |           |          |         | -2.3 | -2.4 | -2.7  | -2.7  | -2.7  | Homo sapiens mRNA: cDNA<br>DKFZ588E1824 (from clone<br>DKFZ588E1824)  | Unpublished                       | 455         | -   |     |
| 23 | 8 | hypothetical protein | 47432_at | HG-U95B | NS2354   |           |           |          |         | -2.7 | -2.7 | -2.3  | -3.7  | -3.7  | prostate cancer associated<br>protein 1   | Genome Res. 6 (9): 807-28<br>1999 | 456         | -   |     |
| 24 | 8 | hypothetical protein | 48086_at | HG-U95B | AJ948584 |           |           |          |         | -3.9 | -6.2 | -15.6 | -13.1 | -13.1 | Homo sapiens cDNA<br>FLJ30086 fs. clone<br>BNGH41000002, moderately<br>similar to<br>ADENYLOSUCINATE<br>SYNTHETASE MUSCLE<br>ISOZYME (EC 6.3.4.4) | Unpublished                       | 457         | -   |     |
| 25 | 8 | hypothetical protein | 48539_at | HG-U95B | AJ971023 |           |           |          |         | -2.1 |      | -5.3  | -5.3  | -5.3  | Homo sapiens cDNA:<br>FLJ22539 fs. clone<br>HRC13227  | Unpublished                       | 458         | -   |     |
| 26 | 8 | hypothetical protein | 49486_at | HG-U95B | W72331   |           |           |          |         | -8   | -3.2 | -4.8  | -7.8  | -11.4 | ESTs  | Unpublished                       | 459         | -   |     |
| 27 | 8 | hypothetical protein | 52834_at | HG-U95B | AW025598 |           |           |          |         | -2.5 |      | -2    | -2    | -2    | Homo sapiens mRNA: cDNA<br>DKFZ434H1235 (from clone<br>DKFZ434H1235; partial cds)   | Unpublished                       | 460         | -   |     |
| 27 | 8 | hypothetical protein | 52837_at | HG-U95B | AW025598 |           |           |          |         | -4.8 | -3.1 | -5.7  | -7.5  | -20.6 | Homo sapiens mRNA: cDNA<br>DKFZ434H1235 (from clone<br>DKFZ434H1235; partial cds)   | Unpublished                       | 460         | -   |     |
| 28 | 8 | hypothetical protein | 55436_at | HG-U95B | AJ669212 |           |           |          |         | -2.5 |      | -3.7  | -6.9  | -6.9  | protein phosphatase 2<br>(formerly 2A), regulatory<br>subunit B (PR 32), gamma<br>isoform   | Unpublished                       | 461         | -   |     |
| 28 | 8 | hypothetical protein | 56531_at | HG-U95B | AL038964 |           |           | KIAA1547 | 15      | -2.6 |      | -2.6  | -2.6  | -2.6  | KIAA1547 protein  | Unpublished                       | 462         | -   |     |
| 30 | 8 | hypothetical protein | 58136_at | HG-U95B | AA778895 |           |           |          |         | -7.4 |      | -3.2  | -6.6  | -6.6  | Homo sapiens cDNA<br>FLJ30781 fs. clone<br>FEBRA2006538   | Unpublished                       | 463         | -   |     |

Table 30

| Cat. category tag      | Probe ID   | Chip    | accession | RefSeq    | gene symbol | map location | lot 1 |       |      | lot 2 |       |    | title  | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|------------------------|------------|---------|-----------|-----------|-------------|--------------|-------|-------|------|-------|-------|----|--|------------------------------|------------------------------|
|                        |            |         |           |           |             |              | Day 3 | Day 7 | IMM  | Day 3 | Day 7 | AI |  |                              |                              |
| 31 10 kinase           | 50075_at   | HG-U95B | U54938    | NM_074529 | NP_078603   | C1orf28      |       |       | -3.5 |       |       |    | -5.7 casin kinase 1 epsilon / chromosome 1 open reading frame 28 | 464                          | 906                          |
| 32 11 matrix protein   | 52576_s.at | HG-U95B | AW007426  | NM_012445 | NP_038577   | SPON2        |       |       | -3   |       |       |    | reference<br>Spondin 2, extracellular matrix protein             | 485                          | 907                          |
| 33 12 membrane protein | 44783_s.at | HG-U95B | U61374    | NM_012258 | NP_036390   | HEY1         |       |       | -8.2 |       |       |    | reference<br>Heavy enhancer-of-split related with YRPW motif 1   | 469                          | 908                          |

Table 31

| Cat. category tag             | Probe ID   | Chip    | Accession | RefSeq    | Gene symbol | Map location | Set 1 |       |       |      | Set 2 |       |    |    | Title   | Reference   | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|-------------------------------|------------|---------|-----------|-----------|-------------|--------------|-------|-------|-------|------|-------|-------|----|----|---|---|------------------------------|------------------------------|
|                               |            |         |           |           |             |              | Day 1 | Day 3 | Day 7 | Imm  | AI    | Imm   | AI | AI |   |   |                              |                              |
| 34 16 oncogenesis             | 46200_at   | HG-U95B | AA742697  | NM_052863 | HN-1        | 5q35-qter    | -5.4  | -3.1  | -32.7 | -4   | -28   | -30.7 |    |    | putative cyclin light in normal-1   | Proc. Natl. Acad. Sci. U.S.A. 98:9795-9801 (2001) | 467                          | 909                          |
| 35 17 others                  | 42065_at   | HG-U95B | M28581    | NM_138398 | LOC129842   | 2p25.2       |       |       | -2    | -5.4 | -4.3  | -2.8  |    |    | Homo sapiens. Similar to RIKEN cDNA 281004G06 gene, clone MGC27286 IMAGE4618778, mRNA, complete cds | Unpublished                                       | 468                          | 910                          |
| 36 17 others                  | 58288_at   | HG-U95B | M63676    | NM_138395 | LOC129842   | 2p25.2       |       |       | -2.8  | -7.2 | -3.9  | -3    |    |    | Homo sapiens. Similar to RIKEN cDNA 281004G06 gene, clone MGC27286 IMAGE4618778, mRNA, complete cds | Unpublished                                       | 469                          | 911                          |
| 37 17 others                  | 43849_s.at | HG-U95B | AA622570  | NM_138505 | LOC131177   | 3p21.1       |       |       | -5.2  | -2.6 |       |       |    |    | Homo sapiens. Similar to RIKEN cDNA 181003C20 gene, clone MGC21481 IMAGE382082, mRNA, complete cds  | Unpublished                                       | 470                          | 912                          |
| 37 17 others                  | 45394_s.at | HG-U95B | AA563933  | NM_138505 | LOC131177   | 3p21.1       |       |       | -4.4  | -2.3 |       |       |    |    | Homo sapiens. Similar to RIKEN cDNA 181003C20 gene, clone MGC21481 IMAGE382082, mRNA, complete cds  | Unpublished                                       | 471                          | 913                          |
| 38 17 others                  | 46030_at   | HG-U95B | AA428580  | NM_033197 | MGC14597    | 20q11.21     |       |       | -3.1  | -3.7 |       |       |    |    | von Ebner minor salivary gland protein  | Unpublished                                       | 472                          | 914                          |
| 39 17 others                  | 46816_at   | HG-U95B | M27741    | NM_016583 | LOC51297    | 20q11.2      |       |       | -9.1  | -4   |       |       |    |    | LUNX protein, PLUNC (platelet and nasal epithelium clone), tracheal epithelium enriched protein     | Biochim. Biophys. Acta 1493:383-387 (2000)        | 473                          | 915                          |
| 40 17 others                  | 51689_r.at | HG-U95B | AA583578  | NM_052895 | MGC14128    | 8q24.13      |       |       | -2.8  | -2.2 |       |       |    |    | ESTs. Moderately similar to alternatively spliced product using exon 13A [H.sapiens]                | Unpublished                                       | 474                          | 916                          |
| 41 20 protein binding protein | 46271_at   | HG-U95B | A753747   | NM_004117 | FKBP5       | 6p21.3-21.2  |       |       |       | -2.3 |       |       |    |    | FK506-binding protein 5   | J. Biol. Chem. 268:18365-18371 (1993)             | 475                          | 917                          |
| 42 20 protein binding protein | 54152_at   | HG-U95B | A024669   | NM_004095 | EIF4EBP1    | 8p12         |       |       |       |      |       |       |    |    | eukaryotic translation initiation factor 4E binding protein 1                                       | Nature 371:762-767 (1994)                         | 476                          | 918                          |

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Table 33

| Cat. category | Probe ID   | Chip    | Accession | RefSeq | RefSeq | gene symbol | map location | lot 1 |       | lot 2 |       | title  | reference                 | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|---------------|------------|---------|-----------|--------|--------|-------------|--------------|-------|-------|-------|-------|--|---------------------------|---------------------------------|---------------------------------|
|               |            |         |           |        |        |             |              | Day 3 | Day 7 | Day 3 | Day 7 |  |                           |                                 |                                 |
| 49            | 44676_at   | HC-U95B | AA045020  |        |        |             |              | -2.4  | -2.8  | -5.7  | -7.1  | hypothetical gene supported by AL449243  | Genome Res. 6 (9): 807-28 | 484                             | -                               |
| 50            | 45694_at   | HC-U95B | AL040338  |        |        |             |              | -2.7  | -2.3  | -4.5  | -4.5  | ESTs   | Unpublished               | 485                             | -                               |
| 51            | 46706_at   | HC-U95B | AB07170   |        |        | SEMA4B      | 15q25        | -2.8  | -1.6  | -2.2  | -2.5  | sema domain, immunoglobulin domain (Ig), transmembrane domain (TM) and short cytoplasmic domain, (semaphorin) 4B | Unpublished               | 486                             | -                               |
| 52            | 47576_at   | HC-U95B | AA160156  |        |        |             |              | -2.4  | -4.2  | -2.3  | -3.1  | ESTs   | Genome Res. 6 (9): 807-28 | 487                             | -                               |
| 53            | 48999_at   | HC-U95B | AA398155  |        |        |             |              | -4.3  | -2    | -2    | -3.8  | ESTs   | Unpublished               | 488                             | -                               |
| 54            | 48819_at   | HC-U95B | AA32375   |        |        |             |              | -2.3  | -4.5  | -8.3  | -5    | ESTs   | Unpublished               | 489                             | -                               |
| 55            | 48955_at   | HC-U95B | AB17802   |        |        |             |              | -2.3  | -2.8  | -2.4  | -4.1  | ESTs   | Unpublished               | 490                             | -                               |
| 56            | 52384_s_at | HC-U95B | AB64760   |        |        |             |              | -2.8  | -2.5  | -5.3  | -4    | ESTs   | Unpublished               | 491                             | -                               |
| 57            | 53741_at   | HC-U95B | AA422178  |        |        |             |              | -5.3  | -2.8  | -32.2 | -32.2 | Homo sapiens cDNA: FLJ21783 fis, clone COLF0887  | Unpublished               | 492                             | -                               |
| 58            | 57282_at   | HC-U95B | AA400850  |        |        |             |              | -2.3  | -4.2  | -4.1  | -4.1  | ESTs   | Unpublished               | 493                             | -                               |
| 59            | 58525_s_at | HC-U95B | AI160772  |        |        |             |              | -2.3  | -2    | -2    | -2    | general transcription factor IIB, polypeptide 3 (34kD subunit)   | Unpublished               | 494                             | -                               |
| 60            | 59109_at   | HC-U95B | AA442332  |        |        |             |              | -2    | -2.3  | -2.2  | -2.2  | ESTs   | Unpublished               | 495                             | -                               |
| 61            | 59567_at   | HC-U95B | AA459099  |        |        |             |              | -2    | -2    | -2.3  | -3.5  | ESTs   | Unpublished               | 496                             | -                               |



Table 34

| Cat. tag | category                | Probe ID   | chip    | accession | RefSeq    | RefSeq    | gene symbol | map location | col. 2 |       |       |       |       |       |       | reference  | SEQ ID NO. (nucleotide seq.) | SEQ ID NO. (amino acid seq.) |
|----------|-------------------------|------------|---------|-----------|-----------|-----------|-------------|--------------|--------|-------|-------|-------|-------|-------|-------|--|------------------------------|------------------------------|
|          |                         |            |         |           |           |           |             |              | Day 1  | Day 3 | Day 7 | Day 1 | Day 3 | Day 7 | Day 1 |  |                              |                              |
| 1        | 3 cell cycles           | 57044_s.at | HG-U95C | AW015590  | NM_014059 | NP_054778 | RGC32       | 13q13.3      | -2.7   |       |       | IMM   | AI    | AI    | -2.2  | title  | 487                          | 928                          |
| 2        | 4 chemidine             | 65223_at   | HG-U95C | N45415    | NM_004687 | NP_004687 | SCVB14      | 5q31         | -4.1   |       |       |       |       |       | -2.1  | 2.2 RGC32 protein subfamily B (Oys-X-Cys), member 14 (BPAK) (1989)             | 488                          | 927                          |
| 3        | 8 hypothetical protein  | 48783_at   | HG-U95C | AA150358  | NM_014699 | NP_057114 | KIAA0878    | 5q15         |        | -2.8  | -2.4  |       |       |       | -2.1  | -2.3 small inducible cytokine subfamily B (Oys-X-Cys), member 14 (BPAK) (1989) | 489                          | 928                          |
| 4        | 8 hypothetical protein  | 49186_at   | HG-U95C | N62044    | NM_017440 | NP_000110 | FLJ20048    | 6p22.1       | -2.4   |       |       |       |       |       | -2.3  | -2.3 hypothetical protein FLJ20048   | 500                          | 929                          |
| 5        | 8 hypothetical protein  | 54791_at   | HG-U95C | AB204463  | NM_032323 | NP_115699 | MGC13102    | 12p13        | -4.5   |       |       |       |       |       | -2.1  | hypothetical protein MGC13102  | 501                          | 930                          |
| 6        | 8 hypothetical protein  | 56234_s.at | HG-U95C | AA053401  |           |           |             |              | -2.5   |       |       |       |       |       | -3.2  | Genome Res. 6 (9): 807-28  | 502                          |                              |
| 7        | 8 hypothetical protein  | 60935_s.at | HG-U95C | AA151245  |           |           |             |              |        | -2.6  |       |       |       |       | -2.7  | ESTs   | 503                          |                              |
| 7        | 8 hypothetical protein  | 60940_s.at | HG-U95C | AA151245  |           |           |             |              |        | -5.9  |       |       |       |       | -11.6 | ESTs   | 503                          |                              |
| 8        | 8 hypothetical protein  | 62480_s.at | HG-U95C | AB07822   | NM_018050 | NP_060520 | FLJ10288    | 12p13.2      | -3.7   |       |       |       |       |       | -3.4  | hypothetical protein FLJ10288  | 504                          | 931                          |
| 9        | 8 hypothetical protein  | 62972_at   | HG-U95C | W56118    |           |           | KIAA1376    | 5q14.3       | -2.5   | -2.2  |       |       |       |       |       | Unpublished  | 505                          |                              |
| 9        | 8 hypothetical protein  | 64047_at   | HG-U95C | AA387245  |           |           | KIAA1376    | 5q14.3       |        | -4    |       |       |       |       |       | Unpublished  | 506                          |                              |
| 10       | 8 hypothetical protein  | 63150_at   | HG-U95C | U52027    |           |           |             |              | -2.9   | 2.5   |       |       |       |       |       | -3.5 ESTs. Weakly similar to U52022  | 507                          |                              |
| 11       | 8 hypothetical protein  | 63342_at   | HG-U95C | AA150254  | NM_016619 | NP_057703 | LOC13116    | 4q21.21      | -2     |       |       |       |       |       |       | hypothetical protein [Hapiens]   | 508                          | 932                          |
| 12       | 8 hypothetical protein  | 64285_at   | HG-U95C | AB050855  |           |           |             | 6p21.23      | -3.6   | -2.6  | -3.7  |       |       |       | -2.9  | ESTs/hypothetical protein FLJ20131   | 509                          |                              |
| 13       | 8 hypothetical protein  | 64345_s.at | HG-U95C | AW003533  |           |           | KIAA1102    | 4p13         | -2.7   |       |       |       |       |       | -3.2  | -4.9 KIAA1102 protein  | 510                          |                              |
| 14       | 8 hypothetical protein  | 65838_at   | HG-U95C | AA059458  |           |           |             |              | -2.3   | -4.5  | -3.1  |       |       |       | -5.8  | -4.8 Homo sapiens cDNA FLJ11041  | 511                          |                              |
| 15       | 8 hypothetical protein  | 65878_at   | HG-U95C | RA3447    |           |           | MGC18207    | 11q25.3      |        | -4.5  | -4    |       |       |       | -2.3  | fls. cDNA FLJ1004105   | 512                          |                              |
| 16       | 10 kinase               | 61873_at   | HG-U95C | AI41715   | NM_000167 | NP_000158 | GK          | Xp21.3       |        |       |       |       |       |       |       | MGC18207   | 513                          | 933                          |
| 17       | 12 membrane protein     | 63958_at   | HG-U95C | AB583077  | NM_005672 | NP_005663 | PSDA        | 8q24.2       |        |       |       |       |       |       | -2.7  | -2.1 glycerol kinase   | 514                          | 934                          |
| 18       | 17 others               | 55440_at   | HG-U95C | AB28943   | NM_016583 | NP_057667 | LOC51287    | 20q11.2      | -57.3  | -10.5 | -6.6  |       |       |       | -5.5  | -9.8 prostate stem cell antigen  | 515                          | 935                          |
| 18       | 17 others               | 55442_s.at | HG-U95C | AB28943   | NM_016583 | NP_057667 | LOC51287    | 20q11.2      | -14    | -4.9  | -18.3 |       |       |       | -10.8 | -33.7 LUNX protein; PLUNC (salivary gland), tracheal epithelium                | 515                          | 936                          |
| 19       | 17 others               | 63813_at   | HG-U95C | AL119488  | NM_016023 | NP_057109 | DREV1       | 19p13.2      | -2     |       |       |       |       |       |       | enriched protein   | 516                          | 936                          |
| 20       | 25 structural protein   | 62998_at   | HG-U95C | AB31452   | NM_005555 | NP_005546 | KRT16B      | 12q17-q13    | -3.4   | -3.5  | -5.6  |       |       |       | -2.1  | lung and nasal epithelium (clone); tracheal epithelium                         | 517                          | 937                          |
| 21       | 26 transcription factor | 64071_at   | HG-U95C | N26812    | NM_018660 | NP_081130 | LOC55893    | 8p12         |        | -2    |       |       |       |       |       | -5.3 keratin 88  | 518                          | 938                          |
| 22       | 26 transcription factor | 64121_at   | HG-U95C | Z78379    | NM_006530 | NP_006521 | GAS41       | 12q13-q15    |        |       |       |       |       |       |       | -2.8 papillomavirus regulatory factor PRP-1                                    | 519                          | 939                          |
| 23       |                         | 64163_at   | HG-U95C | AB70033   |           |           |             |              |        | -3.6  | -2.3  |       |       |       |       | -2.9 alpha-amplified sequence-41   | 520                          | 940                          |
| 24       |                         | 65899_at   | HG-U95C | AB203423  |           |           |             |              |        |       |       |       |       |       |       | Homo sapiens clone 25194 mRNA sequence   | 521                          |                              |
| 24       |                         |            |         |           |           |           |             |              |        | -2.6  |       |       |       |       | -4.7  | hypothetical protein   | 522                          |                              |

Table 35

| Cat. no. | category                | Probe ID   | Chip    | accession | RefSeq    | RefSeq   | map location | log 1 |       |       | log 2 |       |       | title  | reference   | SEQ ID NO. (nucleotide seq.) | SEQ ID NO. (amino acid seq.) |
|----------|-------------------------|------------|---------|-----------|-----------|----------|--------------|-------|-------|-------|-------|-------|-------|--|---|------------------------------|------------------------------|
|          |                         |            |         |           |           |          |              | Day 3 | Day 7 | BM    | Day 3 | Day 7 | BM    |  |   |                              |                              |
| 1        | 2 cell adhesion         | 78815_at   | HG-U95D | AI188813  | NP_001032 | DSG3     | 18q12.1      | -2.9  | -2.4  | -4.2  | -2.8  | -2.4  | -4.2  | desmocollin 3  | Genomics 10640-045 (1991)                         | 523                          | 841                          |
| 2        | 5 cytokine related      | 68339_at   | HG-U95D | AB24028   | NP_000359 | TGFB1    | 5q31         | -2.9  | -4.2  | -3.2  | -2.8  | -4.2  | -3.2  | transforming growth factor, beta-induced, BRD (1992)                                   | DNA Cell Biol. 11 (7), 511-522                    | 524                          | 942                          |
| 3        | 5 cytokine related      | 74633_at   | HG-U95D | AB86430   | NP_006281 | TNFAIP2  | 14q32        |       | -4.6  |       | -2.2  |       | -4.6  | tumor necrosis factor, alpha-induced protein 2   | J. Immunol. 148:3302-3317(1992)                   | 525                          | 843                          |
| 4        | 7 enzyme                | 74557_s_at | HG-U95D | A1738473  | NP_014762 | DHCR24   | 1p33-p31.1   |       | -2    |       | -2.1  |       | -2    | -6.8 24-dehydrocholesterol reductase   | DNA Res. 1:47-56 (1994)                           | 526                          | 944                          |
| 5        | 17 others               | 87231_at   | HG-U95D | AA367838  | NP_133639 | ARH1     | 15q13.3      | -2    | -2.7  |       | -35.8 | -2.7  |       | -4 ras homolog gene family, member V (ARH1)  | Curr. Biol. 8:1125-1126 (1998)                    | 527                          | 945                          |
| 6        | 22 proteinase inhibitor | 75246_at   | HG-U95D | AB79282   | NP_001065 | SERPINA3 | 14q32.1      | -4.8  | -24.4 | -16.3 | -35.8 | -24.4 | -16.3 | proteinase inhibitor, clade A (alpha-1 antitrypsin), member 3                          | Biochem. Biophys. Res. Commun. 111:438-443 (1983) | 528                          | 946                          |
| 7        |                         | 68269_at   | HG-U95D | AA079839  |           |          |              |       | -2.2  |       | -2    |       | -2.2  | ESTs   |   | 529                          |                              |
| 8        |                         | 70128_at   | HG-U95D | A1770116  |           |          |              |       | -2.3  |       | -2.1  |       | -2.3  | -5.1 ESTs  |   | 530                          |                              |
| 9        |                         | 72809_at   | HG-U95D | AA68540   |           |          |              |       | -2    |       | -2.4  |       | -2    | ESTs   |   | 531                          |                              |
| 10       |                         | 78520_at   | HG-U95D | AA022213  |           |          |              |       | -2.6  |       | -2.9  |       | -2.6  | -5.4 ESTs  |   | 532                          |                              |
| 11       |                         | 83076_at   | HG-U95D | A1740855  |           |          |              |       | -2    |       | -2.7  |       | -2    | -3.5 ESTs  |   | 533                          |                              |
| 12       |                         | 83988_at   | HG-U95D | AA428312  |           |          |              |       | -2    |       | -2.7  |       | -2    | -5.4 ESTs  |   | 534                          |                              |
| 13       |                         | 84270_at   | HG-U95D | AB29641   |           |          |              | -5.1  | -3.9  | 11.7  | -24.1 | -39.9 | ESTs  | Weakly similar to 721338 hypothetical protein F2507.4 - Clostridium segetis [Calegari] |   |                              |                              |
| 14       |                         | 84903_s_at | HG-U95D | A284299   |           |          |              | -3.1  |       |       | -10.4 |       |       | -5.9 ESTs  |   | 535                          |                              |
| 15       |                         | 87539_s_at | HG-U95D | AA368887  |           |          |              |       | -3.6  |       | -3.4  |       |       | -7.6 ESTs  |   | 536                          |                              |

Table 36

| Cell category | Probe ID             | Chip     | Accession | RefSeq    | RefSeq    | Gene symbol   | map location | Day 1   |      |       | Day 2 |       |       | title  | reference   | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|---------------|----------------------|----------|-----------|-----------|-----------|---------------|--------------|---------|------|-------|-------|-------|-------|--|---|---------------------------------|---------------------------------|
|               |                      |          |           |           |           |               |              | AI      | BM   | AI    | AI    | BM    | AI    |  |   |                                 |                                 |
| 1             | 80867_f.at           | HG-U95E  | AW008465  | NM_002305 | NP_002296 | LGALS1        | 22q13.1      |         |      | -7.2  | -5.2  | -2.5  | -8.2  | lectin, galactoside-binding, soluble, 1 (galectin 1)   | Proc. Natl. Acad. Sci. U.S.A. 83:7603-7607 (1986) | 538                             | 947                             |
| 2             | 88239_f.at           | HG-U95E  | AI656082  | NM_001843 | NP_001834 | CNTN1         | 12q11-q12    |         |      | -2    | -2.7  | -3.8  | -3.3  | contactin 1  | Genomics 2:571-582                                | 539                             | 948                             |
| 3             | 81928.at             | HG-U95E  | AI685069  | NM_013358 | NP_037490 | PADI1         | 1p38.13      | -6.1    |      | -6.1  | -7.6  | -6.7  | -6.3  | peptidylarginine deiminase type 1  | Unpublished :- ()                                 | 540                             | 949                             |
| 4             | 89741.at             | HG-U95E  | AL120518  | NM_018414 | NP_060884 | ST6GALNAC1    | 17q25.3      | -2.6    |      | -2.4  | -4.3  | -8.8  | -8.4  | GalNAc alpha-2,6-sialyltransferase 1, long form  | J. Biol. Chem. 274:11958-11967 (1999)             | 541                             | 950                             |
| 5             | 69750.at             | HG-U95E  | AI685410  | NM_018182 | NP_060682 | FLJ10718      | 3q29         |         |      | -3    | -4.7  |       | -3.6  | hypothetical protein   | Unpublished                                       | 542                             | 951                             |
| 6             | 77516_f.at           | HG-U95E  | AI683995  |           |           | DKFZP434I1735 | 14           |         |      | -2    |       |       | -2.3  | DKFZP434I1735 protein  | Unpublished                                       | 543                             |                                 |
| 7             | 86024.at             | HG-U95E  | AI671029  | NM_032893 | NP_116288 | MGC14128      | 8q24.13      |         |      | -4    | -2.9  | -2.4  | -2.9  | ESTs. Moderately similar to alternatively spliced product using exon 13A (Hsapiens) / hypothetical protein | Unpublished                                       | 544                             | 952                             |
| 8             | hypothetical protein | 88380.at | HG-U95E   | AA630327  | NM_032893 | NP_116288     | MGC14128     | 8q24.13 | -2.1 | -2.6  | -3.6  | -2.9  | -4    | ESTs. Moderately similar to alternatively spliced product using exon 13A (Hsapiens) / hypothetical protein | Unpublished                                       | 544                             | 952                             |
| 9             | 81275.at             | HG-U95E  | AI149637  | NM_001651 | NP_001642 | AQP5          | 12q13        | -7.7    | -3.8 | -3.7  |       | -14.3 | -7.7  | aquaporin 5  | J. Biol. Chem. 271:8598-8604 (1996)               | 545                             | 953                             |
| 10            | 76769.at             | HG-U95E  | AI758223  |           |           |               |              | -3.8    | -2.1 | -14.8 | -15.7 | -9.6  |       | ESTs   |   | 546                             |                                 |
|               | 88716.at             | HG-U95E  | AI672709  |           |           |               |              | -2.7    |      | -12.8 | -10.7 | -7    | -18.3 | ESTs   |   | 547                             |                                 |

[0191] RefSeq gene sequences on the chips of HG-U95A to HG-U95E and the amino acid sequences thereof, and,

if RefSeq genes are unavailable, EST sequences, are shown in the Sequence Listing.

## 2. Pendrin gene

**[0192]** Among the sequences whose expression levels change in response to IL-13 stimulation in both Lots 1 and 2 in the respiratory epithelial cells cultured by the AI method, the pendrin gene (RefSeq: NM\_000441 and NM\_000432; SEQ ID NOs: 2 and 3) was selected by the analysis described above, as a gene whose expression level was increased on day 3 and day 7 by a factor of ten or more. The Pendrin gene belongs to the category of transporters. In respiratory epithelial cells cultured with the IMM method, the expression level of the pendrin gene was also found to be increased

by a factor of 20 or more in response to IL-13 stimulation on day 3 and day 7 in both Lots 1 and 2.

**[0193]** This gene is closely associated with allergies induced by IL-13 stimulation. The analysis result for the pendrin gene obtained using HG-U95A chip is shown in Table 37.

Table 37

|              |           | Lot 1 |       |       |       | Lot 2 |       |
|--------------|-----------|-------|-------|-------|-------|-------|-------|
|              |           | Day 3 | Day 7 | Day 3 | Day 7 | Day 3 | Day 7 |
| Probe set ID | Accession | AI    | IMM   | AI    | IMM   | AI    | AI    |
| 36376_at     | AF030880  | 18.8  | 25.6  | 20.1  | 28.5  | 118.3 | 58.2  |

**[0194]** The PDS gene is a causative gene of the hereditary disease Pendred's syndrome, which is characterized by congenital deafness and goiters (Everett L. A. et al., Nat. Genet. 17: 411-22 (1997)). The gene was reported as a sulfuric acid transporter, because of the presence of a sulfuric acid transporter domain. However, after the report, the protein has been studied as a protein that transports other anions such as Cl<sup>-</sup> and I<sup>-</sup> (Scott D. A. et al., Nat. Genet. 21(4): 440-3 (1999); Scott D.A. and Karniski L. P., Am. J. Physiol. 278: C207-11 (2000)). Pendrin is an 86-kDa transmembrane protein that consists of 780 amino acid residues and has a 12 transmembrane domain. In humans, the gene has been found to be expressed in the inner ear and thyroid gland at high levels, and in the kidney, endometrium, and placenta at lower levels (Rayaux I.E. et al., Endocrinology 141: 839-45 (2000) ; Bidart J. M. et al., J. Clin. Endocrinol. Metab. 85: 2028-33 (2000)). On the other hand, in mice and rats, the gene is expressed in the kidney at a high level, and the expression is also detectable in the endometrium and placenta. The PDS gene encoding pendrin has been mapped on chromosome 7q31, the location of the DFNB4 locus. The causative gene of congenital colon disorder, DRA (SLC26A3; down-regulated in colonic adenoma), has been mapped immediately downstream of the PDS gene in an inverse configuration.

**[0195]** The DRA gene encodes a sulfur transporter that is expressed at high levels in the colon and mucous membranes, and the transporter is structurally very similar to pendrin. Another gene exhibiting a high similarity to the PDS gene is DTDST (SLC26A2; diastrophic dysplasia) that is a causative gene of diastrophic dysplasia, which has been mapped on chromosome 5q32-q33.1. DTDST is also known to encode a protein functioning as a sulfur transporter. PDS gene knockout mice are deaf and are affected with vestibular function disorders. The inner ears are normal in 15-day olds or younger fetuses, but enlargement, sensory cell deformities, and otocranial deformities are developed after that (Everett L. A. et al., Hum. Mol. Genet. 10(2): 153-61 (2001)).

## EXAMPLE 6

### Determination of the expression levels of candidate genes in bronchial epithelial cells cultured by the AI method or the IMM method

**[0196]** Quantitative PCR assays were further performed with ABI 7700 using two batches of epithelial cells cultured respectively by the AI method and the IMM method described in Example 1 to quantitatively determine the expression level of the pendrin gene selected in Example 5. The primers and TaqMan probe used in the assays with ABI 7700 were designed based on the information on the sequence of the pendrin gene utilizing Primer Express (PE Biosystems). The 5' and 3' ends of the TaqMan probe were labeled with FAM (6-carboxy-fluorescein) and TAMRA (6-carboxy-N,N,N',N'-tetramethylrhodamine), respectively. The sequences of oligonucleotides of the forward primer (F), reverse primer (R), and TaqMan probe (TP) for the pendrin gene are shown below. The GenBank accession number corresponding to the nucleotide sequence of each marker gene is shown in parenthesis after the name. Pendrin (AF030880)

F: TTTGCCTCCTGAACTTCCACC (SEQ ID NO: 4)

R: CCTACTGACACTGCAATAGCATAAGC (SEQ ID NO: 5)

TP: cttgttctcggagatgctggctgcat (SEQ ID NO: 6)

**[0197]** Total RNA extracted by the aforementioned method was treated with DNase (Nippon Gene). Then, cDNA, which was reverse transcribed using random hexamer (GIBCO BRL) as primer, was used as a template. For a standard curve to calculate the number of copies, a plasmid clone containing a nucleotide sequence region that is amplified by both primers was prepared for each of the genes, and this was diluted stepwise to be used as template for carrying out the reaction. The composition of reaction solution for monitoring PCR amplification is shown in Table 38.

Table 38

| Composition of reaction in ABI-PRISM 7700 (Amount per well) |            |
|---|------------|
| Sterilized distilled water                                  | 23.75 (μL) |
| 10x TaqMan buffer A   | 5          |
| 25mM MgCl <sub>2</sub>                                      | 7          |
| dATP(10 mM)   | 1.0        |
| dCTP(10 mM)   | 1.0        |
| dGTP(10 mM)   | 1.0        |
| dUTP (20 mM)  | 1.0        |
| Forward Primer (10 μM)                                      | 1.0        |
| Reverse Primer (10 μM)                                      | 1.0        |
| TaqMan probe (2.0 μM)                                       | 2.5        |
| AmpliTaq Gold (5 U/μL)                                      | 0.25       |
| AmpErase UNG (1 U/μL)                                       | 0.5        |
| Template solution   | 5          |
| Total   | 50         |

**[0198]** Additionally, to correct the differences of cDNA concentration in the sample, a similar quantitative analysis was performed for β-actin gene and glyceraldehyde-3-phosphate dehydrogenase (GAPDH) gene as internal standards for correction. By correcting based on the number of copies of these genes, the number of copies of the genes of interest was calculated.

**[0199]** Primers and probes for measuring β-actin or GAPDH were designed from Primer Express (Applied Biosystems) based on the genetic information of each gene. The nucleotide sequences are as shown below. The β-actin-corrected expression levels (copy/5 ng RNA) for marker genes are shown in Figs. 3.

β-actin forward primer (SEQ ID NO: 7)

TCA CCC ACA CTG TGC CCA TCT ACG A

β-actin reverse primer (SEQ ID NO: 8)

CAG CGG AAC CGC TCA TTG CCA ATG G

β-actin TaqMan probe (SEQ ID NO: 9)

(FAM) ATGCCCTCCCCCATGCCATCCTGCGT (TAMRA) -3'

GAPDH forward primer (SEQ ID NO: 10)  
GAAGGTGAAGGTCGGAGT

GAPDH reverse primer (SEQ ID NO: 11)  
GAAGATGGTGATGGGATTTC

GAPDH TaqMan probe (SEQ ID NO: 12)  
(FAM) CAAGCTTCCCGTTCTCAGCC (TAMRA) -3 '

FAM: 6-carboxy-fluorescein

TAMRA: 6-carboxy-N,N,N',N'-tetramethylrhodamine

**[0200]** As a result of quantitative PCR, the expression level of the pendrin gene (selected in Example 5) in the respiratory tract epithelial cells was elevated by hundred folds or more as a result of IL-13 stimulation in respiratory tract epithelial cells when cultured according to the AI method or IMM method. Based on these results, it was presumed that the expression level of the marker gene was elevated in respiratory tract epithelial cells in response to IL-13.

**[0201]** The marker genes of this invention show common behavior among different lots of bronchial epithelial cells by IL-13 stimulation known to have a close relationship to allergic reactions. Therefore, the marker genes of this invention are thought to be important genes that regulate the progression of allergic reactions.

#### EXAMPLE 7

##### RNA recovery from the lung of OVA antigen-exposed bronchial hypersensitivity mouse model

**[0202]** The OVA antigen-exposed bronchial hypersensitivity model has been reported as a bronchial asthma model. 50 µg OVA and 1 mg aluminum hydroxide (an adjuvant) were injected into the peritoneal cavity of Balb/c mice (male, seven-week old), and after 10 days the mice was sensitized with OVA under the same conditions. Then, after 10 days, 1% OVA was given by inhalation using the Ultra-nebulizer model UN701 (Azwel(Co., Ltd.)) for 30 minutes every four days three times in total. Enhanced bronchial hypersensitivity was monitored by detecting the respiratory constriction caused by acetylcholine (6.25-2000 µg/kg) using an artificial respirator (model 131, New England Medical Instruments Inc.) 24 hours after the final antigen inhalation (Nagai H. et al, Int Arch Allergy Immunol; 108: 189-195, 1995). Bronchial hypersensitivity can be induced by this treatment.

**[0203]** Variations in the expression level of the mouse pendrin gene were studied using RNA from the lungs of this model.

**[0204]** The test was conducted using the following four groups: OVA antigen-exposed bronchial hypersensitivity group (called the "S-OVA group"; N=7)); and three control groups: untreated group (called the "naive group";(N=6)); physiological saline-inhaled group to which the OVA antigen was given twice for immunization and physiological saline was given by inhalation (called the "S-Sal group"; (N=6)); and the Prednisolone-administered group, to which Prednisolone was given by inhalation 10 times in total from the day before antigen inhalation until the final antigen inhalation, and the development of bronchial hypersensitivity was suppressed by giving 5 mg/kg Prednisolone orally (called the "Pred-group"; (N=7)).

**[0205]** The left lungs were removed 24 hours after the antigen was inhaled three times, by which time, the symptoms of bronchial hypersensitivity can be seen. The lung tissues were dissolved in 2 ml of Isogen (Nippon Gene; Wako Pure Chemical Industries) and immediately crushed with the homogenizer DIAx100 (Heidolph). RNA was isolated from 1 ml of this solution according to the protocol attached to Isogen. Chloroform was added to the solution. After the mixture was stirred and centrifuged, the aqueous layer was recovered. Then, isopropanol was added. After the mixture was stirred and centrifuged, the precipitated total RNA was collected. Total RNAs (approximately 20-60 µg) were extracted from the samples of the four groups (N=26) described above.

EXAMPLE 8

Determination of the expression level of pendrin gene in the lung of OVA antigen-exposed bronchial hypersensitivity model

**[0206]** Quantitative PCR assay was performed with ABI 7700 using the lung RNAs described in Example 8 to quantitatively determine the expression level of the mouse pendrin gene (RefSeq: NM\_011867, NM\_035997, SEQ ID NO: 13/DNA, and SEQ ID NO: 14/amino acid sequence). The primers and TaqMan probe used in the assay with ABI 7700 were designed based on the information on the sequence of the pendrin gene utilizing Primer Express (Applied Bio Systems). The 5' and 3' ends of the TaqMan probe were labeled with FAM (6-carboxy-fluorescein) and TAMRA (6-carboxy-N,N,N',N'-tetramethylrhodamine), respectively. The sequences of oligonucleotides of the forward primer (F), reverse primer (R) and TaqMan probe (TP) for the pendrin gene are shown below. The GenBank accession number corresponding to the nucleotide sequence of the mouse pendrin gene is shown in parenthesis after the name.

mouse pendrin (AF167411)

F: GGTTCTTGCCCTCCTGTCCTG (SEQ ID NO: 15)

R: AATGGAAAAGGATGCAGCCA (SEQ ID NO: 16)

TP: catctgtgggcctgttttcggacatg (SEQ ID NO: 17)

**[0207]** Total RNA extracted by the aforementioned method was treated with DNase (Nippon Gene). Then, cDNA, which was reverse transcribed using random hexamer (GIBCO BRL) as primer, was used as a template. For a standard curve to calculate the number of copies, a plasmid clone comprising a nucleotide sequence region that is amplified by both primers was prepared for each of the genes, and this was diluted stepwise to be used as a template for carrying out the reaction. The composition of the reaction solution for monitoring PCR amplification is shown in Table 39.

Table 39

| Composition of the reaction solution in ABI-PRISM 7700 (Amount per well) |            |
|--|------------|
| Sterilized distilled water   | 23.75 (μL) |
| 10x TaqMan buffer A  | 5          |
| 25mM MgCl <sub>2</sub>   | 7          |
| dATP(10 mM)  | 1.0        |
| dCTP(10 mM)  | 1.0        |
| dGTP(10 mM)  | 1.0        |
| dUTP (20 mM)   | 1.0        |
| Forward Primer (10 μM)   | 1.0        |
| Reverse Primer (10 μM)   | 1.0        |
| TaqMan probe (2.0 μM)  | 2.5        |
| AmpliTaq Gold (5 U/μL)   | 0.25       |
| AmpErase UNG (1 U/μL)  | 0.5        |
| Template solution  | 5          |
| Total  | 50         |

**[0208]** Additionally, to correct the differences of cDNA concentration in the sample, a similar quantitative analysis was performed for mouse β-actin gene and mouse glyceraldehyde-3-phosphate dehydrogenase (GAPDH) gene as internal standards for correction. By correcting based on the number of copies of these genes, the number of copies of the genes of interest was calculated.

**[0209]** Primers and probes for measuring mouse β-actin or mouse GAPDH were designed from Primer Express (Applied Biosystems) based on the genetic information of each gene. The nucleotide sequences are as shown below. The mouse β-actin-corrected expression levels (copy/5 ng RNA) for each of the genes are shown in Fig. 4.

mouse  $\beta$ -actin forward primer (SEQ ID NO: 18)  
ACTATTGGCAACGAGCGGTTC

5

mouse  $\beta$ -actin reverse primer (SEQ ID NO: 19)

10

GGATGCCACAGGATTCCATACC

15

mouse  $\beta$ -actin TaqMan probe (SEQ ID NO: 20)  
(FAM) CCTGAGGCTCTTTTCCAGCCTTCCTTCT (TAMRA) -3'

20

mouse GAPDH forward primer (SEQ ID NO: 21)  
GCACCACCAACTGCTTAGCC

25

mouse GAPDH reverse primer (SEQ ID NO: 22)  
CTTTGGCATTGTGGAAGGGCTCATG

30

mouse GAPDH TaqMan probe (SEQ ID NO: 23)  
(FAM) GATGCAGGGATGATGTTCTGG (TAMRA) -3'

FAM: 6-carboxy-fluorescein

35

TAMRA: 6-carboxy-N,N,N',N'-tetramethylrhodamine

**[0210]** According to the result of quantitative PCR, the expression level in the lung of OVA antigen-exposed bronchial hypersensitivity mice was about 50 times higher than that in the lung of physiological saline-inhaled mice. This finding suggests that the pendrin gene may be an important gene that controls the progression of allergic reactions, particularly asthma because the gene is expressed at a higher level in the lung of OVA antigen-exposed bronchial hypersensitivity model mouse that mimics human asthma.

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#### EXAMPLE 9

Determination of the localization of pendrin mRNA in the lung of OVA antigen-exposed bronchial hypersensitivity model by *in situ* hybridization (hereinafter referred to as "ISH")

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**[0211]** After perfusion fixation with 10% buffered neutral formalin, the pulmonary tissues were collected from three mice each of the four groups (the untreated group; the physiological saline-inhaled group; the Prednisolone-administered group; and the OVA antigen-inhaled group) used in Example 9. The tissues were fixed with 10% buffered neutral formalin, and then embedded in paraffin to prepare tissue blocks.

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**[0212]** All paraffin blocks from the mouse lung samples were sliced into 7  $\mu$ m sections. Then, the sections were treated with hematoxylin for nuclear staining. Among the sections, sections exhibiting good tissue morphology were selected from a single individual each of the physiological saline-inhaled group and OVA antigen-inhaled group. The sections were tested by ISH. The nucleotide sequence of the ISH probe is shown in SEQ ID NO: 24.

55

**[0213]** The paraffin sections of mouse lung tissues from the physiological-saline-inhalation group and the OVA-antigen-inhalation group were rehydrated by deparaffinization (washed with water after treatment with xylene, 100%, 90%, 80%, and 70% alcohol). Then, the sections were treated with the above probe. After the staining, the sections were treated for nuclear staining. The condition used for the ISH experiments is described below. The result of ISH is



shown in Fig. 5.

Probe concentration: 250 ng/ml  
hybridization temperature: 60°C  
Duration of hybridization: 6 hours  
Post-hybridization wash: 0.1x SSC/70°C /6 minutes/3 times  
Coloring reagents: NBT/BCIP  
Duration of color development: 7 hours

**[0214]** The ISH result showed that the mouse lung sections from the OVA antigen inhalation group gave a specific staining pattern with the antisense probe. Blue deposits were detectable in the bronchia, bronchiole and macrophages in the pulmonary alveoli. Blue deposits with similar intensity were also found on the epithelial cells of bronchial mucosa. The sense probe resulted in no deposits.

#### EXAMPLE 10

##### PAS staining and Alcian Blue staining of lung tissues of OVA antigen-exposed bronchial hypersensitivity model

**[0215]** The localization of the huge glycoprotein mucin in the lung tissue of OVA antigen-exposed bronchial hypersensitivity model was confirmed by PAS staining for acidic sugar chains and Alcian Blue staining for basic sugar chains. The paraffin blocks of mouse lung tissues from the physiological-saline-inhalation group and the OVA-antigen-inhalation group used in Example 10 were sliced into 3-µm sections. After being rehydrated by deparaffinization (washed with water after treatment with xylene, 100%, 90%, 80% and 70% alcohol), the sections were treated by PAS staining and Alcian Blue staining. The result obtained by the staining is shown in Fig. 6. The reaction conditions used are as follows:

##### PAS staining:

1% periodate solution for 10 minutes  
washing with water for 5 minutes  
cold Schiff's reagent for 15 minutes  
sulfuric water for 2 minutes 3 times  
washing with water

##### Alcian Blue staining:

3% acetic acid for 1 minute  
Alcian Blue staining solution (pH 2.5) for 30 minutes  
3% acetic acid; washing five times  
washing with water  
dehydration, clearing and mounting  
70% alcohol for 5 minutes  
80% alcohol for 5 minutes  
90% alcohol for 5 minutes  
100% alcohol for 5 minutes twice  
xylene for 5 minutes twice  
xylene type mounting agent; mounting with cover glasses

**[0216]** Both PAS staining and Alcian Blue staining resulted in positive reactions in the cytoplasmic granules in epithelial cells and goblet cells of bronchial mucosal membrane. This indicates that the epithelial cells and goblet cells of bronchial mucosal membrane contain mucin. According to the results obtained in Examples 12 and 13, the pendrin mRNA are localized in the epithelial cells and goblet cells of bronchial mucosal membrane.

#### EXAMPLE 11

##### Variations in the expression levels of marker genes in bronchial hypersensitivity model mouse

##### 1. RNA recovery from the lung of OVA antigen-exposed bronchial hypersensitivity model mouse

**[0217]** As mentioned above, the OVA antigen-exposed bronchial hypersensitivity model using 7-week old male Balb/

c mice has been reported to mimic human asthma. This mouse model is prepared as described in Example 7. In such mice, bronchial hypersensitivity is enhanced after the final antigen inhalation. Thus, symptoms quite similar to those of asthma can be induced in this model.

**[0218]** In this Example, RNAs were isolated from the lung and trachea 24 hours after the first, second or third exposure to OVA antigen, and cDNA and cRNA were synthesized from the RNAs. The respective samples were analyzed using a mouse GeneChip (MG-U74A-C), and the result obtained was compared to that from the human goblet cell differentiation model.

**[0219]** RNAs were isolated from the lung and trachea 24 hours after the first, second and third exposure to OVA antigen. The test was conducted using the following four groups: OVA antigen-inhaled bronchial hypersensitivity group (S-OVA); the three control groups: untreated group (naive) ; physiological saline-inhaled group in which OVA antigen was given twice for immunization and physiological saline was given by inhalation (S-Sal); and Prednisolone-treated group, in which Prednisolone was given by inhalation 10 times in total from the day before antigen inhalation until the final antigen inhalation, and the development of bronchial hypersensitivity was suppressed by giving 5 mg/kg Prednisolone orally (Pred).

**[0220]** The lung and trachea were resected 24 hours after the first, second and third exposure to OVA antigen. Each tissue was crushed with a homogenizer called Polytrone immediately after dissolving in Isogen (Nippon Gene; Wako Pure Chemical Industries). RNA was isolated from 1 ml of this solution according to the protocol attached to Isogen. Chloroform was added to the solution. After the mixture was stirred and centrifuged, the aqueous layer was recovered. Then, isopropanol was added to the aqueous solution obtained. After the mixture was stirred and centrifuged, the precipitated total RNA was collected. Total RNAs (approximately 20-60 µg) were extracted from the samples of the twelve groups described above.

## 2. Synthesis of cRNA for GeneChip

**[0221]** Biotinylated cRNA was synthesized by the same method as described in Example 4. About 20-50 µg biotinylated cRNAs were synthesized from the cDNAs obtained from the twelve groups described above. The cRNAs were purified using RNeasy Spin column (QIAGEN) , and then converted into fragments by heat treatment. A 15-µg aliquot of each cRNA was added to a Hybridization Cocktail according to the Expression Analysis Technical Manual. The cocktail is added to an array chip, followed by incubation for hybridization at 45°C for 16 hours. After hybridization, the chip was stained and analyzed by the same procedure as described in Example 4.

## 3. GeneChip analysis

**[0222]** Data analysis was performed using Suite 4.0, which is a GeneChip analysis software. Average Intensity (1) and Background Average (2) were determined by Absolute Analysis, and four average values obtained (naive group, S-Sal group, S-OVA group, and Pred group) by subtracting (2) from (1). These four values were used as scale factors for comparison analysis.

**[0223]** First, absolute analysis was performed to analyze one chip data. Positives and negatives were determined by comparing the fluorescence intensity of perfect match and mismatch of a probe set. Determination of the three categories of Absolute Calls, i.e., P (present) , A (absent) , and M (marginal) , were made by values of Pos Fraction, Log Avg, and Pos/Neg:

Pos Fraction; ratio of positive pairs.

Log Avg; average of the log of fluorescence intensity ratio between probe cells of perfect match and mismatch.

Pos/Neg; ratio of the number of positive pairs and negative pairs.

**[0224]** Additionally, Average Difference (Avg Diff), which is the average value of the difference in fluorescence intensities between perfect matching and mismatching probe cells, was calculated for each gene.

**[0225]** Next, Comparison Analysis was performed on two sets of data. For example, comparison was made between S-Sal group and S-OVA group, and the difference in expression levels was ranked as follows.

**[0226]** Determination of the 5 categories of difference calls, which are I, D, MI, MD, and NC, were made from values of Inc/Dec, Inc Ratio, Dpos-Dneg Ratio, and Log Avg Ratio Change.

Inc: Number of probe pairs that corresponded to S-Sal group and S-OVA group and that were judged to have increased expression levels in S-OVA group.

Dec: Number of pairs judged to have decreased expression levels in S-OVA group.

Inc/Dec: Ratio of the number of pairs judged to be Inc and number of pairs judged to be Dec.

Inc Ratio: Number of pairs judged to be Inc/number of pairs actually used.

Dpos/Dneg Ratio: Ratio between the number of Neg Change subtracted from that of Pos Change, and the number of

pairs actually used.

Pos Change: Difference between the number of positive pairs in Absolute Analysis of S-Sal group, and the number of positive pairs in Absolute Analysis of S-OVA group.

Neg Change: Difference between the number of negative pairs in Absolute Analysis of S-Sal group, and the number of negative pairs in Absolute Analysis of S-OVA group.

Log Avg Ratio Change: Difference between Log Avg in Absolute Analysis of S-Sal group and S-OVA group.

Increased: I,

Decreased: D,

Marginally Increased: MI,

Marginally Decreased: MD, and

No Change: NC

4. Comparison of a group of genes associated with goblet cell differentiation, which was narrowed down using the chips of HG-U95A to HG-U95E, with a group of genes derived from the OVA antigen-exposed bronchial hypersensitivity model, which was narrowed down using the chips of MG-U74A, MG-U74B, and MG-U74C

**[0227]** NetAffx database (Affymetrix) was searched for the mouse counterparts of the genes narrowed down using HG-U95A to HG-U95E chips as described above. The Fold Change values are shown in Tables 40 to 83, which were obtained by further analyzing the counterpart genes contained in mouse GeneChip MG-U74A to MG-U74C comparatively between S-Sal group and S-OVA group using Suite4.0 (Affymetrix).

**[0228]** Based on the expression levels in the mouse asthma model, the genes categorized are shown in Tables 40 to 62 (mouse counterpart genes of the human genes whose expression levels were found to increase by IL-13 under the culture conditions according to the AI method) and Tables 63 to 83 (mouse counterpart genes of the human genes whose expression levels were found to be decreased by IL-13 under the culture condition according to the AI method).

Table 40

| cat# | category      | human      |   | mouse |                |          |               |               |               |                    |         |          |   | MASMS   |         |         |         | reference                             |
|------|---------------|------------|---|-------|----------------|----------|---------------|---------------|---------------|--------------------|---------|----------|---|---------|---------|---------|---------|---------------------------------------|
|      |               | Probe ID   | title   | #     | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology | name  | 1st P/A | 2nd P/A | 3rd P/A | 3rd P/A |                                       |
| 1    | cell adhesion | 113.at     | thrombospondin 1                              | 1     | 190469.at      | M62470   | NM_011550     | NP_035710     | 2 65.0 cM     | A                  | 94.00%  | 94.00%   | thrombospondin 1  | 1.1     | 1.7     | 1.5     | P       | J. Biol. Chem. 265:16931-16938 (1990) |
| 2    | cell adhesion | 1451.s.at  | extracellular matrix factor 2 (vascular type) | 2     | 92593.at       | D13664   | NM_015764     | NP_056599     | -             | A                  | -       | -        | extracellular matrix factor 2 (vascular type)                   | 1.2     | 0.609   | 1       | P       | Biochem. J. 294:271-278 (1993)        |
| 2    | cell adhesion | 1420.at    | cadherin 6, type 2                            | 3     | 101720.at      | D82029   | NM_007666     | NP_031892     | 15            | A                  | 89.83%  | 89.83%   | cadherin 6 Putative Ortholog (highly conserved)                 | 0.833   | 1.1     | 0.114   | P       | Dev. Biol. 183:180-194 (1997)         |
| 2    | cell adhesion | 3250.at    | intracellular adhesion molecule 1 precursor   | 4     | 101141.at      | M33038   | -             | -             | 9             | A                  | -       | -        | intracellular adhesion molecule 1 precursor                     | 1       | 0.237   | 1       | A       | Cell 52:925-933 (1988)                |
| 2    | cell adhesion | 32640.at   | intracellular adhesion molecule 1 precursor   | 5     | 86732.at       | M80551   | -             | -             | 9             | A                  | -       | -        | intracellular adhesion molecule 1 precursor                     | 1.3     | 1.2     | 0.714   | P       | Cell 52:925-933 (1988)                |
| 2    | cell adhesion | 39119.s.at | natural killer cell transcript 4              | 6     | none           | -        | -             | -             | -             | -                  | -       | -        | -   | -       | -       | -       | -       | -                                     |
| 2    | cell adhesion | 35803.at   | ras homolog gene family, member E             | 6     | 105606.at      | AF010072 | NM_024810     | NP_063086     | 2 01.1        | B                  | 93.06%  | 93.06%   | SIKEN cDNA 2610017M01 gene Putative Ortholog (highly conserved) | 1.5     | 0.5     | 0.687   | A       | Math. Enzymol. 305:19-44 (1993)       |
| 2    | cell adhesion | 35803.at   | ras homolog gene family, member E             | 7     | 162053.at      | AA716925 | NM_024810     | NP_063086     | 2 01.1        | B                  | 93.06%  | 93.06%   | SIKEN cDNA 2610017M01 gene Putative Ortholog (highly conserved) | 1       | 0.833   | 1.2     | P       | Math. Enzymol. 305:19-44 (1993)       |

| cat# | category   | human    |           | mouse |                |         |               |               |               |                    |         |          |                   | MASMS   |         |         |         | reference              |
|------|------------|----------|-----------|-------|----------------|---------|---------------|---------------|---------------|--------------------|---------|----------|-------------------|---------|---------|---------|---------|------------------------|
|      |            | Probe ID | title     | #     | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology | name              | 1st P/A | 2nd P/A | 3rd P/A | 3rd P/A |                        |
| 3    | cell cycle | 1794.at  | cyclin D3 | 8     | 160545.at      | M86183  | NM_007632     | NP_031858     | 17            | A                  | 90.84%  | 90.84%   | cyclin D3 Homolog | 0.825   | 1.1     | 0.333   | P       | Cell 65:701-713 (1991) |
| 3    | cell cycle | 1795.at  | cyclin D3 | 8     | 160545.at      | M86183  | NM_007632     | NP_031858     | 17            | A                  | 90.84%  | 90.84%   | cyclin D3 Homolog | 0.825   | 1.1     | 0.333   | P       | Cell 65:701-713 (1991) |

| cat# | category  | human    |   | mouse |                |          |               |               |               |                    |         |          |   | MASMS   |         |         |         | reference   |
|------|-----------|----------|---|-------|----------------|----------|---------------|---------------|---------------|--------------------|---------|----------|---|---------|---------|---------|---------|---|
|      |           | Probe ID | title   | #     | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology | name  | 1st P/A | 2nd P/A | 3rd P/A | 3rd P/A |   |
| 4    | chemokine | 35061.at | small inducible cytokine subfamily B (Cys-X-Cys), member 11 precursor | 9     | 140659.at      | AA174767 | NM_019494     | NP_062367     | 5             | C                  | 93.76%  | 93.76%   | small inducible cytokine subfamily B (Cys-X-Cys), member 11 Putative Ortholog | 3.8     | 2       | 1       | A       | J. Immunol. 164:6322-6331 (2000)                    |
| 4    | chemokine | 431.at   | small inducible cytokine subfamily B (Cys-X-Cys), member 10           | 10    | 93653.at       | M33266   | NM_021274     | NP_067249     | 5             | A                  | 94.81%  | 94.81%   | small inducible cytokine B subfamily (Cys-X-Cys), member 10 Putative Ortholog | 1.3     | 1.7     | 2       | A       | Biochem. Biophys. Res. Commun. 168:1261-1267 (1990) |

| cat# | category         | human     |                                    | mouse |                |         |               |               |               |                    |         |          |   | MASMS   |         |         |         | reference                           |
|------|------------------|-----------|------------------------------------|-------|----------------|---------|---------------|---------------|---------------|--------------------|---------|----------|---|---------|---------|---------|---------|-------------------------------------|
|      |                  | Probe ID  | title                              | #     | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology | name  | 1st P/A | 2nd P/A | 3rd P/A | 3rd P/A |                                     |
| 5    | cytokine related | 1016.s.at | interleukin 13 receptor, alpha 2   | 11    | 95344.at       | U85747  | NM_008356     | NP_032382     | X 63.0 cM     | A                  | 80.61%  | 80.61%   | interleukin 13 receptor, alpha 2 Putative Ortholog                      | 1.4     | 1.5     | 1.2     | A       | J. Immunol. 161:2317-2324 (1998)    |
| 5    | cytokine related | 1282.s.at | transforming growth factor, beta 2 | 12    | 93300.at       | X57413  | NM_008357     | NP_032393     | 1 101.5 cM    | A                  | 94.07%  | 94.07%   | transforming growth factor, beta 2 Putative Ortholog (highly conserved) | 0.789   | 0.333   | 0.5     | P       | Mol. Endocrinol. 3:1108-1114 (1989) |

| cat# | category          | human    |   | mouse |                |          |               |               |               |                    |         |          |   | MASMS   |         |         |         | reference                   |
|------|-------------------|----------|---|-------|----------------|----------|---------------|---------------|---------------|--------------------|---------|----------|---|---------|---------|---------|---------|-----------------------------|
|      |                   | Probe ID | title   | #     | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology | name  | 1st P/A | 2nd P/A | 3rd P/A | 3rd P/A |                             |
| 6    | cytosolic protein | 2761.at  | DnaL (Hsd40) homolog, subfamily A, member 1   | 13    | 97261.at       | AF055604 | NM_008298     | NP_032324     | 5 21.0 cM     | A                  | 91.15%  | 91.15%   | DnaL (Hsd40) homolog, subfamily A, member 1 Homolog               | 0.476   | 0.509   | 0.933   | P       | Genomics 53 (3), 415 (1995) |
| 6    | cytosolic protein | 39164.at | growth arrest and DNA-damage-inducible, gamma | 14    | 101919.at      | AF055609 | NM_011817     | NP_059547     | 13            | A                  | 88.68%  | 88.68%   | growth arrest and DNA-damage-inducible 45 gamma Putative Ortholog | 2.3     | 5.4     | 1.9     | P       | Oncogene 12 (1995)          |

Table 41

| cat# | category             | human<br>Probe ID | title  | mouse<br>Probe ID | GenBank     | mouse Ref<br>Seq | mouse Ref<br>Seq | mouse Map<br>Location | homology      | name   | MASSE      |            |            |            |   |       | reference |  |
|------|----------------------|-------------------|--|-------------------|-------------|------------------|------------------|-----------------------|---------------|--------|------------|------------|------------|------------|---|-------|-----------|--|
|      |                      |                   |  |                   |             |                  |                  |                       |               |        | 1st<br>P/A | 2nd<br>P/A | 3rd<br>P/A | 3rd<br>P/A |   |       |           |  |
| 6    | cytosolic<br>protein | 39154_at          | growth arrest and DNA-damage-<br>inducible, gamma  | 15                | 109338_at   | AB035425         | NM_011817        | NP_035947             | 13            | B      | 88.8%      | 0.900      | A          | 1.7        | P | 0.809 | A         | Oncogene 7: (1999)                               |
| 7    | enzyme               | 1948_f.at         | nitric oxide synthase 2A (inducible,<br>hepatocytes)                                       | 16                | 104402_at   | U43428           | NM_010927        | NP_035057             | 11            | A      |            | 2.3        | A          | 1.1        | A | 0.714 | A         | J. Biol. Chem. 267:6370-6374 (1992)              |
| 7    | enzyme               | 32571_at          | methionine adenosyltransferase II,<br>alpha  | 17                | 107835_at   | A021374          | -                | -                     | B             | 98.70% |            | 1.9        | A          | 1.2        | A | 0.833 | A         | -  |
| 7    | enzyme               | 32715_f.at        | phospholipid scramblase 1  |                   | none        |                  |                  |                       |               |        |            |            |            |            |   |       |           |  |
| 7    | enzyme               | 34785_at          | procollagen-lysine 2-oxoglutarate<br>5-dioxygenase (lysine hydroxylase)<br>2               | 18                | 114376_at   | AW259579         | NM_011861        | NP_036091             | 9 520 cM      | B      | 89.21%     | 0.833      | P          | 1.1        | P | 0.809 | P         | Matrix Biol. 18:325-328 (1999)                   |
| 7    | enzyme               | 34823_at          | dephosphorylase IV (CD26,<br>adenosine deaminase complexing<br>protein 2)                  | 19                | 87634_at    | U12620           | NM_010074        | NP_034204             | 2 350 cM      | A      | 91.15%     | 0.714      | A          | 0.714      | A | 0.714 | P         | J. Biol. Chem. 267:2200-2208 (1992)              |
| 7    | enzyme               | 35495_at          | fructose-1,6-bisphosphatase (FBP1)<br>gene, exon 7   | 20                | 86918_at    | A1780931         | NM_018395        | NP_062268             | 13            | A      | 86.24%     | 0.789      | A          | 2.3        | A | 1.7   | P         | -  |
| 7    | enzyme               | 37483_at          | histone deacetylase 9  | 21                | 185478_f.at | A1482191         | -                | -                     | C             | 93.71% |            | 1.3        | P          | 1.3        | P | 2.2   | P         | -  |
| 7    | enzyme               | 3812_f.at         | lysophosphatidyl-RNA synthetase  |                   | -           | X86657           | NM_011710        | NP_035840             | 12            |        | 89.00%     |            |            |            |   |       |           | Biochimie 75 (12), 1027-1038 (1993)              |
| 7    | enzyme               | 38178_at          | 17-beta-hydroxysteroid<br>dehydrogenase (17b-HSD) gene                                     | 22                | 108670_at   | AV028295         | NM_008290        | NP_032316             | B             | C      | 91.51%     | 0.789      | A          | 0.809      | A | 0.885 | A         | Biochem. J. 325:199-205 (1997)                   |
| 7    | enzyme               | 38178_at          | 17-beta-hydroxysteroid<br>dehydrogenase (17b-HSD) gene                                     | 23                | 166141_f.at | AV224027         | NM_008290        | NP_032316             | B             | C      | 91.51%     | 0.714      | A          | 0.528      | A | 1.9   | A         | Biochem. J. 325:199-205 (1997)                   |
| 7    | enzyme               | 38178_at          | 17-beta-hydroxysteroid<br>dehydrogenase (17b-HSD) gene                                     | 24                | 101881_at   | Y08517           | NM_008290        | NP_032316             | B             | A      | 91.51%     | 1.8        | A          | 0.867      | A | 0.808 | A         | Biochem. J. 325:199-205 (1997)                   |
| 7    | enzyme               | 38220_at          | dihydropyrimidine dehydrogenase  | 25                | 111849_at   | A053171          | -                | -                     | B             |        | 89.01%     | 0.588      | A          | 0.588      | A | 0.833 | A         | -  |
| 7    | enzyme               | 38287_at          | proteasome (prosome, macropain)<br>subunit, beta type 5 (large<br>multifunctional protein) | 26                | 93095_at    | D44456           | NM_013585        | NP_036813             | 17 1829<br>cM |        | 85.87%     |            |            |            |   |       |           |  |
| 7    | enzyme               | 38388_at          | 2'-5' oligoadenylate synthetase<br>gene, isoform E18, E19                                  | 27                | 102717_f.at | X58077           | -                | -                     | A             |        | 84.33%     | 1.6        | A          | 1.7        | A | 2.2   | A         | Nucleic Acids Res. 1991 Apr<br>25;19(8):1917-24. |
| 7    | enzyme               | 38389_at          | 2'-5' oligoadenylate synthetase<br>gene, isoform E18, E19                                  | 27                | 102717_at   | X58077           | -                | -                     | A             |        | 84.33%     | 1.6        | A          | 1.7        | A | 2.2   | A         | Nucleic Acids Res. 1991 Apr<br>25;19(8):1917-24. |
| 7    | enzyme               | 38404_at          | transglutaminase 2 (C polypeptide,<br>protein-glutamine gamma-<br>glutamyltransferase)     | 28                | 93352_at    | M85154           | NM_009373        | NP_033398             | 2 880 cM      | A      |            | 1          | P          | 1.3        | P | 0.833 | P         | J. Biol. Chem. 266:478-483 (1991)                |
| 7    | enzyme               | 39263_at          | 2'-5' oligoadenylate synthetase 2,<br>isoform p69  |                   | none        |                  |                  |                       |               |        |            | -          | -          | -          | - | -     | -         | -  |
| 7    | enzyme               | 39425_at          | thioredoxin reductase 1  | 29                | 161043_f.at | AV277588         | NM_015782        | NP_055277             | 10            | A      |            | 1.4        | A          | 1.8        | A | 0.588 | A         | Gen. 2000 Jan 25;24(1)-2321-30.                  |
| 7    | enzyme               | 39425_at          | thioredoxin reductase 1  | 30                | 99885_at    | AB027585         | NM_015782        | NP_055277             | 10            | A      |            | 1.2        | P          | 0.809      | P | 1     | P         | Gen. 2000 Jan 25;24(1)-2321-30.                  |

Table 42

|   |        |            |          |  |    |         |           |           |    |         |  |       |     |   |       |   |                                       |
|---|--------|------------|----------|--|----|---------|-----------|-----------|----|---------|--|-------|-----|---|-------|---|---------------------------------------|
| 7 | enzyme | 39425.at   | AV799386 | thioredoxin reductase 1  | 10 | A       | NP_056577 | NP_056577 | 10 | A       | thioredoxin reductase 1  | 0.909 | 1.3 | P | 0.789 | P | Gen. 2000 Jan 25:242(-)-2321-30.      |
| 7 | enzyme | 39425.at   | AB54834  | thioredoxin reductase 1  | 10 | B       | NP_056577 | NP_056577 | 10 | B       | thioredoxin reductase 1  | 0.323 | 2.8 | A | 0.866 | A | Gen. 2000 Jan 25:242(-)-2321-30.      |
| 7 | enzyme | 40505.at   | AF159230 | ubiquitin-conjugating enzyme E2L 6                                 | 2  |         | NP_064323 | NP_064323 | 2  |         | ubiquitin-conjugating enzyme                                       | -     | -   | - | -     | - | Genome Res. 10 (11): 175-177 (2000)   |
| 7 | enzyme | 4132.at    | D18106   | sialyltransferase 1 (beta-galactoside alpha-2,5-sialyltransferase) | 18 | 15.5 cM | NP_033201 | NP_033201 | 18 | 15.5 cM | sialyltransferase 1 (beta-galactoside alpha-2,5-sialyltransferase) | 0.385 | 1.3 | A | 1.6   | A | Bioorg. Med. Chem. 1:141-145 (1993)   |
| 7 | enzyme | 4132.at    | AV024481 | sialyltransferase 1 (beta-galactoside alpha-2,5-sialyltransferase) | 18 | 15.5 cM | NP_033201 | NP_033201 | 18 | 15.5 cM | sialyltransferase 1 (beta-galactoside alpha-2,5-sialyltransferase) | 0.769 | 1.5 | A | 0.809 | A | Bioorg. Med. Chem. 1:141-145 (1993)   |
| 7 | enzyme | 41556_s.at | AF019385 | heparan sulfate D-glucosaminyl 3-O-sulfotransferase 1 precursor    | 5  | 22.0 cM | NP_034604 | NP_034604 | 5  | 22.0 cM | heparan sulfate D-glucosaminyl 3-O-sulfotransferase 1              | 1.4   | 0.4 | A | 1     | P | J. Biol. Chem. 272:28008-28019 (1997) |

| human    | mouse             | homology | name                                      | 1st   | 2nd   | 3rd   | reference |
|----------|-------------------|----------|---|-------|-------|-------|-----------|
| 33787.at | KIAA0537          | 95.27%   | ESTs Putative Ortholog (highly conserved) | 0.909 | 0.833 | 0.769 | A         |
| 34714.at | Q4FZP564A032      |          | SAM domain and HD domain, 1               | 1.2   | 0.303 | 1.1   | A         |
| 34714.at | U15635            |          | SAM domain and HD domain, 1               | 1.3   | 1.3   | 0.909 | P         |
| 36070.at | cDNA DKFZ58600118 | 87.91%   | RIKEN cDNA 633040A020 gene                | 2     | 1     | 0.769 | A         |
| 36927.at | AK020937          |          | RIKEN cDNA 8230104P22 gene                | -     | -     | -     | -         |
| 37230.at | KIAA0469          | 93.70%   | IMACE3873522                              | -     | -     | -     | -         |
| 37784.at | none              |          |   | -     | -     | -     | -         |
| 41402.at | none              |          |   | -     | -     | -     | -         |

| human     | mouse  | homology | name  | 1st | 2nd | 3rd | reference |
|-----------|--------|----------|---|-----|-----|-----|-----------|
| 1107_s.at | X58602 | 84.17%   | interferon-stimulated protein (15 kDa)                      | 4.3 | 4.2 | 2.2 | P         |
| 38432.at  | X58602 |          | interferon-stimulated protein (15 kDa)                      | 4.3 | 4.2 | 2.2 | P         |
| 32814.at  | U43084 | 85.58%   | interferon-induced protein with tetratricopeptide repeats 1 | 1.8 | 1.9 | 1.6 | P         |
| 32814.at  | U43084 | 85.58%   | interferon-induced protein with tetratricopeptide repeats 1 | 1.3 | 1.1 | 1.2 | P         |
| 815.at    | U43084 | 85.58%   | interferon-induced protein with tetratricopeptide repeats 1 | 1.8 | 1.9 | 1.6 | P         |

Table 43

| interferon-inducible protein | 915.at    | interferon-induced protein with tetratricopeptide repeats 1         | 42 | 168295_f.at | AV060188 | NM_006331 | NP_032357 | 18       | C | 85.5% | interferon-induced protein with tetratricopeptide repeats 1 Putative Ortholog              | 1.3   | P | 1.1 | P | 1.2   | P | Genomics 24:137-148 (1994)                        |
|------------------------------|-----------|---|----|-------------|----------|-----------|-----------|----------|---|-------|--|-------|---|-----|---|-------|---|---|
| interferon-inducible protein | 33304.at  | interferon stimulated gene (20K)                                    | 43 | 102432.at   | AW122677 | NM_020583 | NP_065608 | 7        | A | 85.1% | interferon-stimulated protein (20 kDa) Putative Ortholog (highly conserved)                | 1     | P | 1.2 | P | 1     | P | Math. Enzymol. 303:19-44 (1999)                   |
| interferon-inducible protein | 38549.at  | virgin (cag) mRNA   | 44 | 105385.at   | A1315194 | NM_021384 | NP_067359 | 12       | B | 85.8% | oral hematologic leucemia virus (HSCV) induced gene 1 Putative Ortholog (highly conserved) | 0.769 | P | 1.7 | P | 0.286 | A | J. Virol. 73:1846-1852 (1999)                     |
| interferon-inducible protein | 38594.at  | interferon-induced protein with tetratricopeptide repeats 4         |    | none        |          |           |           |          |   |       |  | -     |   | -   |   | -     |   |   |
| interferon-inducible protein | 40322.at  | interleukin 1 receptor-like 1                                       | 45 | 98501.at    | Y07519   | NM_010743 | NP_034873 | 120.0 cM | A | 81.5% | interleukin 1 receptor-like 1 Curated Ortholog   | 0.789 |   | 1.8 |   | 1     |   | Proc. Natl. Acad. Sci. U.S.A. 86:5709-5712 (1989) |
| interferon-inducible protein | 40322.at  | interleukin 1 receptor-like 1                                       | 46 | 98500.at    | D13695   | NM_010743 | NP_034873 | 120.0 cM | A | 81.7% | interleukin 1 receptor-like 1 Putative Ortholog (highly conserved)                         | 1.3   | A | 3.4 | P | 2.4   | P | Proc. Natl. Acad. Sci. U.S.A. 86:5709-5712 (1989) |
| interferon-inducible protein | 425.at    | interferon, alpha-inducible protein 27                              |    | none        |          |           |           |          |   |       |  | -     |   | -   |   | -     |   |   |
| interferon-inducible protein | 464.s.at  | interferon-induced protein 35                                       |    | -           | AW98054  | -         | -         | -        | - | 85.4% | expressed sequence AW98054   | -     |   | -   |   | -     | - | -   |
| interferon-inducible protein | 626.s.at  | interferon-induced protein 35                                       |    | -           | AW98054  | -         | -         | -        | - | 85.4% | expressed sequence AW98054   | -     |   | -   |   | -     | - | -   |
| interferon-inducible protein | 675.at    | interferon induced transmembrane protein 1 (9-27)                   |    | -           | AK033407 | -         | BA922771  | 774      | - |       | RIKEN cDNA 1110004C05 gene   | -     |   | -   |   | -     | - | Math. Enzymol. 303:19-44 (1999)                   |
| interferon-inducible protein | 1358.s.at | interferon, alpha-inducible protein (clone JF7-4-16)                |    | none        |          |           |           |          |   |       |  | -     |   | -   |   | -     | - |   |
| interferon-inducible protein | 37641.at  | hepatitis C-associated microtubular aggregate protein p44, exon 9   |    | none        |          |           |           |          |   |       |  | -     |   | -   |   | -     | - |   |
| interferon-inducible protein | 39728.at  | interferon, gamma-inducible protein 30                              | 47 | 97444.at    | AJB44520 | NM_023065 | NP_075552 | 8        | A | 78.2% | interferon gamma inducible protein 30 Putative Ortholog                                    | 1.3   | A | 1.9 | A | 1.8   | A | Science 284:1381-1385 (2001)                      |
| interferon-inducible protein | 39728.at  | interferon, gamma-inducible protein 30                              | 48 | 164423.at   | AV076807 | NM_023065 | NP_075552 | 8        | B | 78.2% | interferon gamma inducible protein 30 Putative Ortholog                                    | 0.714 | A | 4   | P | 4.1   | A | Science 284:1381-1385 (2001)                      |
| interferon-inducible protein | 608.at    | ISG-54K gene (interferon stimulated gene) encoding a 54 kDa protein | 49 | 164273.at   | AV276912 | -         | -         | -        | B | 86.3% | ESTs Putative Ortholog   | 1     | A | 1   | A | 1.5   | A | -   |

| human    | mouse                            | mouse Ref Seq | mouse Map chip ID | homology | name   | 1st P/A | 2nd P/A | 3rd P/A | 3rd reference |       |   |                                     |
|----------|----------------------------------|---------------|-------------------|----------|--|---------|---------|---------|---------------|-------|---|-------------------------------------|
| 1500.at  | p21 (CDKN1A)-activated kinase 2  | 97823.at      | AW122689          | 95.1%    | DNA segment, Chr 16, ERATO D01268, expressed Putative Ortholog | 1.1     | P       | 1.1     | P             | -     |   |                                     |
| 1500.at  | p21 (CDKN1A)-activated kinase 2  | 97822.at      | AW122689          | 95.1%    | DNA segment, Chr 16, ERATO D01268, expressed Putative Ortholog | 1       | P       | 0.509   | P             | 0.809 | P | -                                   |
| 1500.at  | p21 (CDKN1A)-activated kinase 2  | 97821.at      | AJ640086          | 95.1%    | DNA segment, Chr 16, ERATO D01268, expressed Putative Ortholog | 0.909   | A       | 1       | P             | 1     | P | -                                   |
| 35965.at | A kinase (PRKA) anchor protein 2 | 101435.at     | AF033275          | 90.2%    | A kinase anchor protein 2 Homolog                              | 0.833   | P       | 0.833   | P             | 1     | P | J. Biol. Chem. 273:6533-6541 (1998) |

[illegible]



Table 45

|    |            |          |  |    |           |          |           |           |    |         |        |  |  |   |       |   |       |   |       |   |                                       |
|----|------------|----------|--|----|-----------|----------|-----------|-----------|----|---------|--------|--|--|---|-------|---|-------|---|-------|---|---------------------------------------|
| 13 | metabolism | 32383.at | cholesterol 25-hydroxylase                 | 69 | 104509.at | AF093113 | NM_009990 | NP_034020 | 19 | A       |        |  |  | cholesterol 25-hydroxylase Putative Ortholog (highly conserved) | 1.1   | P | 3.1   | P | 1.9   | P | J. Biol. Chem. 273:34316-34327 (1998) |
| 13 | metabolism | 32383.at | cholesterol 25-hydroxylase                 | 70 | 133666.at | AA50812  | NM_009990 | NP_034020 | 18 | C       | 86.1%  |  |  | cholesterol 25-hydroxylase Putative Ortholog (highly conserved) | 0.588 | A | 0.809 | A | 0.769 | A | J. Biol. Chem. 273:34316-34327 (1998) |
| 13 | metabolism | 34636.at | arachidonate 15-lipoxygenase               | 71 | 98758.at  | L34570   | NM_009660 | NP_033790 | 11 | 40.0 cm | 82.14% |  |  | arachidonate 15-lipoxygenase Homolog                            | 1.1   | P | 3.5   | P | 8     | P | J. Biol. Chem. 268:13979-13987 (1994) |
| 13 | metabolism | 35017.at | phosphatidylethanol transfer protein, beta | 72 | 102658.at | A717899  | NM_019840 | NP_062614 | 5  | A       |        |  |  | phosphatidylethanol transfer protein, beta Curated Ortholog     | 1.3   | P | 1     | P | 0.714 | P | -                                     |
| 13 | metabolism | 353.at   | phosphatidylethanol transfer protein, beta | 72 | 102658.at | A717899  | NM_019840 | NP_062614 | 5  | A       |        |  |  | phosphatidylethanol transfer protein, beta Curated Ortholog     | 1.3   | P | 1     | P | 0.714 | P | -                                     |
| 13 | metabolism | 353.at   | phosphatidylethanol transfer protein, beta | 73 | 102697.at | U46934   | NM_019840 | NP_062614 | 5  | A       |        |  |  | phosphatidylethanol transfer protein, beta Curated Ortholog     | 0.303 | A | 0.333 | A | 0.5   | A | -                                     |

| cell category | human | Probe ID | title   | #  | mouse     | Probe ID | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology | name  | 1st   | 2nd | 3rd   | 3rd reference |       |   |   |
|---------------|-------|----------|---|----|-----------|----------|-----------|---------------|---------------|--------------------|---------|----------|---|-------|-----|-------|---------------|-------|---|---|
| 14            | MHC   | 34427.at | major histocompatibility complex, class I-like sequence | 74 | 101433.at | AF010452 | NM_002209 | NP_032235     | 1             | H1                 | A       | 88.1%    | histocompatibility-2 complex class I-like sequence Putative Ortholog (highly conserved) | 0.576 | A   | 0.825 | A             | 0.833 | A | Biochem. Biophys. Res. Commun. 238:897-902 (1997) |
| 14            | MHC   | 35537.at | MHC class I molecule (MICB) gene                        |    | none      |          |           |               |               |                    |         |          |   | -     | -   | -     | -             | -     | - | -   |
| 14            | MHC   | 37420.at | clone RP3-377H14 on chromosome 6p21.32-22.1             | 75 | 98438.at  | X16202   | NM_010394 | NP_034524     | 17            | 19.19 cm           | A       | 92.3%    | histocompatibility 2, O region locus 7 Putative Ortholog                                | 1.3   | P   | 1.4   | P             | 1.2   | P | EMBO J. 4:3203-3207 (1985)                        |
| 14            | MHC   | 37421.at | clone RP3-377H14 on chromosome 6p21.32-22.1             | 75 | 98438.at  | X16202   | NM_010394 | NP_034524     | 17            | 19.19 cm           | A       | 92.3%    | histocompatibility 2, O region locus 7 Putative Ortholog                                | 1.3   | P   | 1.4   | P             | 1.2   | P | EMBO J. 4:3203-3207 (1985)                        |

| cell category | human       | Probe ID | title  | #  | mouse     | Probe ID | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology | name  | 1st   | 2nd | 3rd   | 3rd reference |     |   |  |
|---------------|-------------|----------|--|----|-----------|----------|-----------|---------------|---------------|--------------------|---------|----------|---|-------|-----|-------|---------------|-----|---|--|
| 15            | MMP related | 34539.at | metalloproteinase 1  |    | none      |          |           |               |               |                    |         |          |   | -     | -   | -     | -             | -   | - | -  |
| 15            | MMP related | 35478.at | disintegrin and metalloproteinase domain 28, isoform 1, 2, 3 | 76 | 101723.at | U06146   | -         | AAAI18425     | 14            | A                  | A       | 83.9%    | disintegrin and metalloproteinase domain 28 Putative Ortholog                             | 0.714 | A   | 0.769 | A             | 1.8 | A | Proc. Natl. Acad. Sci. USA 91:17148-17151 (1994) |
| 15            | MMP related | 40712.at | disintegrin and metalloproteinase domain 8 precursor         | 77 | 103024.at | X13335   | NM_007403 | NP_031429     | 7             | A                  | A       | 83.24%   | disintegrin and metalloproteinase domain 8 Putative Ortholog                              | 0.769 | A   | 3.4   | A             | 4.8 | P | Int. Immunol. 2:585-591 (1990)                   |
| 15            | MMP related | 668_1.at | matrix metalloproteinase 7                                   | 78 | 52317.at  | L38244   | NM_010810 | NP_034940     | 9             | 1.0 cm             | A       |          | matrix metalloproteinase 7 Curated Ortholog   | 2.3   | A   | 1.8   | A             | 1.8 | A | Mol. Biol. Cell 6:851-869 (1995)                 |
| 15            | MMP related | 668_2.at |  | 78 | 114151.at | AA20250  | NM_010810 | NP_034940     | 9             | 1.0 cm             | B       | 94.2%    | ESTs, highly similar to AF116721.8 PR0007 (Hsapiens) Putative Ortholog (highly conserved) | 1     | A   | 1.2   | A             | 1.4 | A | Mol. Biol. Cell 6:851-869 (1995)                 |
| 15            | MMP related | 668_3.at |  | 80 | 182318.at | AV09212  | NM_010810 | NP_034940     | 9             | 1.0 cm             | A       |          | matrix metalloproteinase 7 Curated Ortholog   | 0.769 | A   | 1.7   | M             | 1.3 | A | Mol. Biol. Cell 6:851-869 (1995)                 |

| cell category | human     | Probe ID | title   | #  | mouse     | Probe ID | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology | name  | 1st | 2nd | 3rd | 3rd reference |   |   |                 |
|---------------|-----------|----------|---|----|-----------|----------|-----------|---------------|---------------|--------------------|---------|----------|---|-----|-----|-----|---------------|---|---|-----------------|
| 15            | oncogenes | 40392.at | deleted in bladder cancer chromosome region candidate 1 | 81 | 166806.at | AB35337  | NM_019967 | NP_064351     | 13            | C                  | C       | 92.9%    | deleted in bladder cancer chromosome region candidate 1 (human) Putative Ortholog | 1.4 | P   | 1.5 | P             | 1 | P | Unpublished - 0 |

| cell category | human | Probe ID | title | # | mouse | Probe ID | GenBank | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology | name | 1st | 2nd | 3rd | 3rd reference |
|---------------|-------|----------|-------|---|-------|----------|---------|---------------|---------------|--------------------|---------|----------|------|-----|-----|-----|---------------|
|               |       |          |       |   |       |          |         |               |               |                    |         |          |      |     |     |     |               |

Table 46

|    |             |          |  |    |             |          |           |           |    |     |        |   |        |  |       |   |       |   |                                     |   |   |
|----|-------------|----------|--|----|-------------|----------|-----------|-----------|----|-----|--------|---|--------|--|-------|---|-------|---|-------------------------------------|---|---|
| 17 | others      | 34484.at | ADP-ribosylation factor guanine nucleotide-exchange factor 2 | 82 | 112853.at   | A035478  | -         | -         | 2  | B   | 96.30% | expressed sequence A035430 Putative Ortholog                              | 1      | P  | 0.909 | P | 1.3   | P | -                                   |   |   |
| 17 | others      | 38430.at | fatty acid binding protein 4, adipocyte                      | 83 | 100567.at   | M20497   | NM_024406 | NP_077717 | 3  | 133 | CM     | A   | 86.37% | fatly acid binding protein 4 adipocyte Putative Ortholog | 0.556 | P | 0.714 | P | 1.1                                 | P | Proc. Natl. Acad. Sci. U.S.A. 81:5489-5492 (1984) |
| 17 | others      | 38612.at | tetrazin 3   | 84 | 97912.at    | A034488  | NM_019793 | NP_052767 | 9  | A   | 91.42% | transmembrane 4 superfamily member 8 Putative Ortholog (highly conserved) | 3.6    | A  | 1     | A | 0.769 | A | Genome Res. 10:1617-1630 (2000)     |   |   |
| 17 | others      | 39420.at | DNA-damage-inducible transcription 3                         | 85 | 101429.at   | X67093   | NM_007837 | NP_031693 | 10 | A   |        | DNA-damage inducible transcript 3 Curated Ortholog                        | 0.37   | A  | 0.526 | A | 0.625 | A | Genes Dev. 6:439-453 (1992)         |   |   |
| 17 | others      | 39555.at | dubiquitin   | 86 | 97847.at    | M11408   | NM_013647 | NP_036675 | 7  | A   | 90.60% | ribosomal protein S16 Putative Ortholog (highly conserved)                | 1      | P  | 1     | P | 1     | P | Mol. Cell. Biol. 5:3560-3576 (1985) |   |   |
| 17 | others      | 39555.at | dubiquitin   | 87 | 188860.f.at | M11408   | NM_013647 | NP_036675 | 7  | C   | 90.60% | ribosomal protein S16 Putative Ortholog (highly conserved)                | 3.3    | P  | 1.4   | A | 1.1   | A | Mol. Cell. Biol. 5:3560-3576 (1985) |   |   |
| 17 | others      | 39555.at | dubiquitin   | 88 | 169362.f.at | AV069368 | NM_023137 | NP_076526 | 17 | C   |        | ubiquitin D Curated Ortholog  | 1.2    | A  | 1     | A | 0.667 | A | Genome Res. 10:1617-1630 (2000)     |   |   |
| 17 | others      | 39555.at | dubiquitin   | 89 | 97715.at    | AV069368 | NM_023137 | NP_076526 | 17 | A   |        | ubiquitin D Curated Ortholog  | 0.714  | A  | 0.455 | A | 0.675 | A | Genome Res. 10:1617-1630 (2000)     |   |   |
| 17 | others      | 39555.at | dubiquitin   | 90 | 168938.f.at | AV069368 | NM_023137 | NP_076526 | 17 | C   |        | ubiquitin D Curated Ortholog  | 1.4    | P  | 0.667 | A | 1.4   | A | Genome Res. 10:1617-1630 (2000)     |   |   |
| 17 | others      | 40456.at | up-regulated by BCG-CWS                                      | 91 | 112237.at   | A1115916 | NM_026228 | NP_090504 | 3  | B   | 87.41% | RKEN cDNA 493241/3020 gene Putative Ortholog (highly conserved)           | 1.1    | P  | 1     | P | 1     | P | Meth. Enzymol. 303:19-44 (1999)     |   |   |
| 17 | others      | 40456.at | up-regulated by BCG-CWS                                      | 92 | 97442.at    | A1115916 | NM_026228 | NP_090504 | 3  | A   | 87.41% | RKEN cDNA 493241/3020 gene Putative Ortholog (highly conserved)           | 1.2    | P  | 1     | P | 0.833 | P | Meth. Enzymol. 303:19-44 (1999)     |   |   |
| 27 | transporter | 34759.at | hbc47 mRNA sequence  | 93 | 110939.at   | A0339647 | -         | -         | -  | B   | 97.01% | expressed sequence A0339647 Putative Ortholog (highly conserved)          | 0.909  | P  | 0.833 | P | 0.909 | P | -                                   |   |   |

| human | cat# | category    | Probe ID | title                                  | #  | mouse       | Probe ID | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology | name   | 1st   | 1st P/A | 2nd   | 2nd P/A | 3rd | 3rd P/A | reference                       |
|-------|------|-------------|----------|--|----|-------------|----------|-----------|---------------|---------------|---------------|--------------------|---------|----------|--|-------|---------|-------|---------|-----|---------|---------------------------------|
|       | 19   | phosphatase | 38272.at | dual specificity phosphatase 14        | 94 | 162702.at   | A0351272 | NM_018819 | NP_062793     | NP_062793     | NP_062793     | 11 480             | CM      | B        | dual specificity phosphatase 14 Putative Ortholog (highly conserved) | 1.2   | P       | 1.1   | P       | 1   | P       | Genome Res. 10:1617-1630 (2000) |
|       | 19   | phosphatase | 38272.at | dual specificity phosphatase 14        | 95 | 165144.f.at | AV357704 | NM_018819 | NP_062793     | NP_062793     | NP_062793     | 11 480             | CM      | B        | dual specificity phosphatase 14 Putative Ortholog (highly conserved) | 0.5   | A       | 0.833 | A       | 1.1 | A       | Genome Res. 10:1617-1630 (2000) |
|       | 19   | phosphatase | 38272.at | dual specificity phosphatase 14        | 96 | 171285.at   | AV210631 | NM_018819 | NP_062793     | NP_062793     | NP_062793     | 11 480             | CM      | C        | dual specificity phosphatase 14 Putative Ortholog (highly conserved) | 1.7   | A       | 0.909 | A       | 2.3 | A       | Genome Res. 10:1617-1630 (2000) |
|       | 19   | phosphatase | 677.s.at | acid phosphatase 5, tartrate resistant | 97 | 162543.f.at | AV248952 | NM_007388 | NP_031414     | NP_031414     | NP_031414     | 9 60               | CM      | B        | acid phosphatase 5, tartrate resistant Curated Ortholog              | 4.3   | A       | 8.8   | A       | 8.7 | A       | Gene 130:201-207 (1993)         |
|       | 19   | phosphatase | 677.s.at | acid phosphatase 5, tartrate resistant | 98 | 98559.at    | M99554   | NM_007388 | NP_031414     | NP_031414     | NP_031414     | 9 60               | CM      | A        | acid phosphatase 5, tartrate resistant Homolog                       | 0.769 | P       | 1.4   | P       | 1.7 | P       | Gene 130:201-207 (1993)         |

| human | cat# | category        | Probe ID | title               | #  | mouse    | Probe ID | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology | name   | 1st  | 1st P/A | 2nd | 2nd P/A | 3rd | 3rd P/A | reference |                                 |
|-------|------|-----------------|----------|---------------------|----|----------|----------|-----------|---------------|---------------|---------------|--------------------|---------|----------|--------|--|---------|-----|---------|-----|---------|-----------|---------------------------------|
|       | 20   | binding protein | 41952.at | JAK binding protein | 99 | 92532.at | U98925   | NM_009896 | NP_034028     | NP_034028     | NP_034028     | 16                 | A       | A        | 50.16% | cyclin inducible Shc-containing protein 1 Putative Ortholog (highly conserved) | 1.6     | A   | 1.9     | A   | 1.3     | P         | Mol. Reprod. Dev. 43:1-6 (1996) |

| human | cat# | category   | Probe ID | title        | #   | mouse       | Probe ID | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology | name                          | 1st   | 1st P/A | 2nd | 2nd P/A | 3rd | 3rd P/A | reference                                       |
|-------|------|------------|----------|--------------|-----|-------------|----------|-----------|---------------|---------------|---------------|--------------------|---------|----------|-------------------------------|-------|---------|-----|---------|-----|---------|---|
|       | 21   | proteinase | 132.at   | cathespain C | 100 | 101019.at   | U74853   | NM_009952 | NP_024112     | NP_024112     | NP_024112     | 7 D3-E1.1          | A       |          | cathespain C Curated Ortholog | 1.2   | P       | 1.1 | P       | 1   | P       | Biochim. Biophys. Acta 1351 (3), 267-273 (1997) |
|       | 21   | proteinase | 132.at   | cathespain C | 101 | 181251.f.at | AV310954 | NM_009952 | NP_024112     | NP_024112     | NP_024112     | 7 D3-E1.1          | A       |          | cathespain C Curated Ortholog | 0.667 | A       | 1   | A       | 1.2 | A       | Biochim. Biophys. Acta 1351 (3), 267-273 (1997) |

Table 47

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| 21 | proteinase | 133.at | cathepsin C | 102 | 101020.at | AB42607 | NM_005982 | NP_004112 | 7 D3-E1.1 | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | </ |
|----|------------|--------|-------------|-----|-----------|---------|-----------|-----------|-----------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|

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|    |                     |        |  |     |          |        |           |          |            |   |  |  |     |   |     |   |   |   |                        |
|----|---------------------|--------|--|-----|----------|--------|-----------|----------|------------|---|--|--|-----|---|-----|---|---|---|------------------------|
| 24 | signal transduction | 879.at | myxovirus (influenza virus) resistance 2 (mouse) | 115 | 88417.at | M21038 | NM_010846 | NP_03476 | 18 71.2 cM | A |  |  | 1.1 | A | 2.2 | A | 3 | A | Cell 44:147-158 (1986) |
|----|---------------------|--------|--|-----|----------|--------|-----------|----------|------------|---|--|--|-----|---|-----|---|---|---|------------------------|

| cat | category           | Probe ID | title                        | human    |                | mouse    |               | mouse         |                    | mouse Ref Seq | mouse Map Location | chip ID | homology  | name | MASM5 |     |     |       | 3rd reference                         |
|-----|--------------------|----------|------------------------------|----------|----------------|----------|---------------|---------------|--------------------|---------------|--------------------|---------|---|------|-------|-----|-----|-------|---------------------------------------|
|     |                    |          |                              | Probe ID | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Map Location |               |                    |         |   |      | 1st   | 2nd | 3rd |       |                                       |
| 25  | structural protein | 36951.at | plastin 1                    | -        | -              | AI027122 | -             | -             | -                  | -             | -                  | 89.30%  | expressed sequence AA27122 (AA27122)                | -    | -     | -   | -   | -     | -                                     |
| 25  | structural protein | 601.x.at | keratin type 18 gene, exon 8 | 117      | 164432.at      | U085754  | NM_008470     | NP_032488     | 11 D               | B             |                    |         | keratin complex 1, acidic, gene 16 Curated Ortholog | 1.5  | A     | 1.8 | A   | 0.625 | J. Biol. Chem. 273:32265-32272 (1998) |
| 25  | structural protein | 601.x.at | keratin type 16 gene, exon 8 | 118      | 102589.at      | AF052325 | NM_008470     | NP_032486     | 11 D               | A             |                    |         | keratin complex 1, acidic, gene 16 Curated Ortholog | 1.8  | A     | 1.3 | A   | 1.1   | J. Biol. Chem. 273:32265-32272 (1998) |

| cat | category             | Probe ID   | title  | human    |                | mouse    |               | mouse         |                    | mouse Ref Seq | mouse Map Location | chip ID | homology  | name  | MASM5 |       |     |       | 3rd reference                     |   |
|-----|----------------------|------------|--|----------|----------------|----------|---------------|---------------|--------------------|---------------|--------------------|---------|---|-------|-------|-------|-----|-------|-----------------------------------|---|
|     |                      |            |  | Probe ID | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Map Location |               |                    |         |   |       | 1st   | 2nd   | 3rd |       |                                   |   |
| 26  | transcription factor | 32859.at   | signal transducer and activator of transcription 1, 91kD     | 119      | 101465.at      | U06924   | NM_009283     | NP_033309     | 1 25.9 cM          | A             |                    |         | signal transducer and activator of transcription 1 Curated Ortholog | 1.8   | P     | 1.8   | P   | 1     | Science 264:95-98 (1994)          |   |
| 26  | transcription factor | 32859.at   | signal transducer and activator of transcription 1, 91kD     | 120      | 114635.at      | AA960121 | NM_009283     | NP_033309     | 1 25.9 cM          | B             |                    |         | signal transducer and activator of transcription 1 Curated Ortholog | 2     | P     | 1.9   | P   | 1.1   | Science 264:95-98 (1994)          |   |
| 26  | transcription factor | 32860.x.at | signal transducer and activator of transcription 1, 91kD     | 119      | 101465.at      | U06924   | NM_009283     | NP_033309     | 1 25.9 cM          | A             |                    |         | signal transducer and activator of transcription 1 Curated Ortholog | 1.8   | P     | 1.8   | P   | 1     | Science 264:95-98 (1994)          |   |
| 26  | transcription factor | 32860.x.at | signal transducer and activator of transcription 1, 91kD     | 120      | 114635.at      | AA960121 | NM_009283     | NP_033309     | 1 25.9 cM          | B             |                    |         | signal transducer and activator of transcription 1 Curated Ortholog | 2     | P     | 1.9   | P   | 1.1   | Science 264:95-98 (1994)          |   |
| 26  | transcription factor | 33338.at   | STAT1  | 119      | 101465.at      | U06924   | NM_009283     | NP_033309     | 1 25.9 cM          | A             |                    |         | signal transducer and activator of transcription 1 Curated Ortholog | 1.8   | P     | 1.8   | P   | 1     | Science 264:95-98 (1994)          |   |
| 26  | transcription factor | 33339.x.at | STAT1  | 119      | 101465.at      | U06924   | NM_009283     | NP_033309     | 1 25.9 cM          | A             |                    |         | signal transducer and activator of transcription 1 Curated Ortholog | 1.8   | P     | 1.8   | P   | 1     | Science 264:95-98 (1994)          |   |
| 26  | transcription factor | 33961.at   | c-myc promoter-binding protein                               | 121      | 93281.at       | AF049125 | NM_011992     | NP_038122     | 9                  | A             |                    | 90.8%   | reticulocalbin 2 Putative Ortholog (highly conserved)               | 0.909 | P     | 0.933 | P   | 0.909 | J. Neurochem. 64:2339-2344 (1995) |   |
| 26  | transcription factor | 33280.x.at | zinc finger protein 263                                      | 122      | 109154.at      | AW121894 | -             | -             | 16                 | B             |                    | 84.87%  | zinc finger protein 263 Putative Ortholog                           | 0.769 | P     | 0.933 | P   | 1.3   | P                                 | -   |
| 26  | transcription factor | 35432.at   | RNA polymerase II transcriptional regulation mediator (Med8) | -        | -              | AK005232 | NM_027213     | NP_061489     | 12                 | -             |                    | -       | RIKEN cDNA 150002F11 gene   | -     | -     | -     | -   | -     | Meth. Enzymol. 303, 19-44 (1999)  |   |
| 26  | transcription factor | 36412.x.at | interferon regulatory factor 7B                              | -        | -              | U73037   | NM_016550     | NP_059546     | 7 F4               | -             |                    | 79.90%  | interferon regulatory factor 7 (orf7)                               | -     | -     | -     | -   | -     | Meth. Enzymol. 303, 19-44 (1999)  |   |
| 26  | transcription factor | 37544.at   | nuclear factor, interleukin 3 regulated                      | 123      | 184758.x.at    | AV222614 | NM_017373     | NP_069069     | 13 32.2 cM         | B             |                    | 87.50%  | nuclear factor, interleukin 3, regulated Curated Ortholog           | 1.4   | A     | 0.714 | A   | 1.3   | A                                 | Proc. Natl. Acad. Sci. U.S.A. 94:2609-2614 (1997) |

| cat | category    | Probe ID | title                         | human    |                | mouse    |               | mouse         |                    | mouse Ref Seq | mouse Map Location | chip ID | homology                                       | name | MASM5 |     |     |     | 3rd reference |                                     |
|-----|-------------|----------|-------------------------------|----------|----------------|----------|---------------|---------------|--------------------|---------------|--------------------|---------|--|------|-------|-----|-----|-----|---------------|-------------------------------------|
|     |             |          |                               | Probe ID | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Map Location |               |                    |         |  |      | 1st   | 2nd | 3rd |     |               |                                     |
| 27  | transporter | 36376.at | pendrin                       | -        | -              | AF167411 | NM_011897     | NP_035997     | 12 B1              | -             |                    |         | solute carrier family 28, member 4 (SLC28a4)   | -    | -     | -   | -   | -   | -             |                                     |
| 27  | transporter | 41038.at | neutrophil cytosolic factor 2 | 126      | 102328.at      | AB002564 | NM_010577     | NP_035007     | 1 78.1 cM          | A             |                    |         | neutrophil cytosolic factor 2 Curated Ortholog | 2    | M     | 2.2 | P   | 1.2 | P             | Eur. J. Biochem. 251:573-582 (1998) |

Table 49

| human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human | human |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------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|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|

Table 50

| cat # | human                | category | title  | #  | mouse<br>Probe ID | GenBank  | mouse Ref<br>Seq | mouse Ref<br>Seq | mouse Map<br>Location | chr | homology | name  | MASNS   |            |            |      | 3rd<br>P/A | reference |      |                                  |  |
|-------|----------------------|----------|--|----|-------------------|----------|------------------|------------------|-----------------------|-----|----------|---|---|------------|------------|------|------------|-----------|------|----------------------------------|--|
|       |                      |          |  |    |                   |          |                  |                  |                       |     |          |   | 1st<br>P/A  | 2nd<br>P/A | 3rd<br>P/A |      |            |           |      |                                  |  |
| 7     | enzyme               | 57151.at | ADP-ribosylation factor-like 7   | 14 | 108049.at         | A1332268 | -                | -                | -                     | -   | B        | 93.75%  | EST's Homolog   | 0.77       | P          | 1    | P          | 0.83      | P    | -                                |  |
| 7     | enzyme               | 59215.at | RNA helicase   |    | none              |          |                  |                  |                       |     |          |   |   |            |            |      |            |           |      |                                  |  |
| 7     | enzyme               | 51925.at | ESTs, Weakly similar to phosphatidylinositol-specific phospholipase A1 delta C [H.sapiens] | 15 | 110639.at         | AW108146 | -                | -                | -                     | -   | B        | 84.09%  | ESTs, Weakly similar to A34671 triacylglycerol lipase [Mus musculus]<br>Putative Ortholog | 0.71       | A          | 0.24 | A          | 0.83      | A    | -                                |  |
| 8     | hypothetical protein | 43366.at | hypothetical protein FLJ10261  | 16 | 107112.at         | A121737  | -                | -                | -                     | -   | B        | 88.10%  | Mus musculus clone MGC8241, mRNA, complete cds Putative Ortholog (highly conserved)       | 1.2        | P          | 1.6  | P          | 1.4       | P    | -                                |  |
| 8     | hypothetical protein | 43903.at | hypothetical protein FLJ10261  | 16 | 107112.at         | A121737  | -                | -                | -                     | -   | B        | 88.10%  | Mus musculus clone MGC8241, mRNA, complete cds Putative Ortholog (highly conserved)       | 1.2        | P          | 1.6  | P          | 1.4       | P    | -                                |  |
| 8     | hypothetical protein | 50209.at | hypothetical protein FLJ14281  | 17 | 116862.at         | A1843057 | -                | -                | -                     | -   | B        | 91.34%  | RIKEN cDNA 5730495F10 gene Putative Ortholog (highly conserved)                           | 1.4        | A          | 1.5  | A          | 1.4       | A    | -                                |  |
| 8     | hypothetical protein | 50209.at | hypothetical protein FLJ14281  | 18 | 163364.at         | AA472475 | -                | -                | -                     | -   | B        | 91.34%  | RIKEN cDNA 5730495F10 gene Putative Ortholog (highly conserved)                           | 0.77       | P          | 0.77 | P          | 1         | P    | -                                |  |
| 8     | hypothetical protein | 50209.at | hypothetical protein FLJ14281  | 19 | 168478.at         | AV286153 | -                | -                | -                     | -   | C        | 91.34%  | RIKEN cDNA 5730495F10 gene Putative Ortholog (highly conserved)                           | 0.91       | P          | 1.1  | P          | 1.3       | P    | -                                |  |
| 8     | hypothetical protein | 53777.at | hypothetical protein FLJ22613  |    | -                 | BE587122 | -                | -                | -                     | -   | -        | 99.60%  | EST's   | -          | -          | -    | -          | -         | -    | -                                |  |
| 8     | hypothetical protein | 56959.at | hypothetical protein FLJ22332  |    | none              |          |                  |                  |                       |     |          |   |   | -          | -          | -    | -          | -         | -    | -                                |  |
| 8     | hypothetical protein | 57197.at | hypothetical protein DKF2656J091   |    | -                 | AK020110 | NM_029399        | NP_084276        | -                     | -   | -        | limb-bud and heart (LbH-pending)                    | -   | -          | -          | -    | -          | -         | -    | Meth. Enzymol. 303, 19-44 (1993) |  |
| 8     | hypothetical protein | 58957.at | hypothetical protein FLJ20637  | 20 | 113253.at         | A852111  | -                | -                | -                     | -   | B        | 89.19%  | RIKEN cDNA 2510038N07 gene Putative Ortholog  | 1.6        | P          | 1.1  | A          | 1.3       | A    | -                                |  |
| 8     | hypothetical protein | 58957.at | hypothetical protein FLJ20637  | 21 | 170481.at         | AV209483 | -                | -                | -                     | -   | C        | 89.19%  | RIKEN cDNA 2510038N08 gene Putative Ortholog  | 2.1        | A          | 0.71 | A          | 1.2       | A    | -                                |  |
| 8     | hypothetical protein | 58957.at | hypothetical protein FLJ20637  | 22 | 115732.at         | AIS30075 | -                | -                | -                     | -   | B        | 89.19%  | RIKEN cDNA 2510038N09 gene Putative Ortholog  | 1.2        | A          | 1.3  | A          | 1.4       | A    | -                                |  |
| 14    | MHO                  | 49203.at | hypothetical protein DKF265470I14  |    | none              |          |                  |                  |                       |     |          |   |   | -          | -          | -    | -          | -         | -    | -                                |  |
| 8     | hypothetical protein | 44137.at | Homo sapiens mRNA full length insert cDNA clone EUROIMAGE 594845                           | 23 | 106644.at         | AW047110 | NM_009370        | NP_033396        | 4 18.3 cM             | B   | 92.73%   | transforming growth factor, beta receptor 1 Homolog | 0.91  | P          | 0.77       | P    | 0.77       | P         | 0.77 | P                                | Biochem. Biophys. Res. Commun. 198: 1054-1062 (1994) |
| 8     | hypothetical protein | 44137.at | Homo sapiens mRNA full length insert cDNA clone EUROIMAGE 594845                           | 24 | 92427.at          | D25540   | NM_009370        | NP_033396        | 4 18.3 cM             | A   | 92.73%   | transforming growth factor, beta receptor 1 Homolog | 2   | A          | 0.36       | A    | 1.2        | A         | 1.2  | A                                | Biochem. Biophys. Res. Commun. 198: 1054-1062 (1994) |
| 8     | hypothetical protein | 44638.at | Homo sapiens cDNA FLJ1051, full length insert cDNA clone EUROIMAGE 203                     |    | none              |          |                  |                  |                       |     |          |   |   |            |            |      |            |           |      |                                  |  |
| 8     | hypothetical protein | 47087.at | Homo sapiens cDNA FLJ25117, full length insert cDNA clone CBR0757                          |    | none              |          |                  |                  |                       |     |          |   |   |            |            |      |            |           |      |                                  |  |
| 8     | hypothetical protein | 48976.at | Homo sapiens mRNA: cDNA DKF265430B18 (from clone DKF265430B18)                             |    | none              |          |                  |                  |                       |     |          |   |   |            |            |      |            |           |      |                                  |  |
| 8     | hypothetical protein | 52307.at | Homo sapiens mRNA full length insert cDNA clone EUROIMAGE 594845                           | 23 | 106644.at         | AW047110 | NM_009370        | NP_033396        | 4 18.3 cM             | B   | 92.73%   | transforming growth factor, beta receptor 1 Homolog | 0.91  | P          | 0.77       | P    | 0.77       | P         | 0.77 | P                                | Biochem. Biophys. Res. Commun. 198: 1054-1062 (1994) |

Table 51

|                      |            |  |           |           |           |           |   |        |   |      |   |      |   |      |   |  |
|----------------------|------------|--|-----------|-----------|-----------|-----------|---|--------|---|------|---|------|---|------|---|--|
| hypothetical protein | 52307_at   | Homo sapiens mRNA full length insert cDNA clone EUROMAGE 994846  | D25540    | NM_009370 | NP_033395 | 4 19.3 cM | A | 92.73% | transforming growth factor, beta receptor 1 Homolog               | 2    | A | 0.36 | A | 1.2  | A | Biochem. Biophys. Res. Commun. 198: 1054-1062 (1994) |
| hypothetical protein | 52327_s.at | Homo sapiens mRNA cDNA DKFZ434Q227 (from clone DKFZ434Q227)      | AW125043  | -         | -         | -         | A | 0.93%  | expressed sequence AY253284 Putative Ortholog                     | 1    | P | 0.83 | P | 0.83 | P | -  |
| hypothetical protein | 52535_at   | Homo sapiens mRNA full length insert cDNA clone EUROMAGE 994846  | AW047110  | NM_009370 | NP_033395 | 4 19.3 cM | B | 92.73% | transforming growth factor, beta receptor 1 Homolog               | 0.51 | P | 0.77 | P | 0.77 | P | Biochem. Biophys. Res. Commun. 198: 1054-1062 (1994) |
| hypothetical protein | 52539_at   | Homo sapiens mRNA full length insert cDNA clone EUROMAGE 994846  | D25540    | NM_009370 | NP_033395 | 4 19.3 cM | A | 92.73% | Transforming growth factor, beta receptor 1 Homolog               | 2    | A | 0.36 | A | 1.2  | A | Biochem. Biophys. Res. Commun. 198: 1054-1062 (1994) |
| hypothetical protein | 52822_at   | Homo sapiens cDNA FLJ11812 fl. clone HEMBA1006364                | none      | -         | -         | -         | - | -      | -   | -    | - | -    | - | -    | - | -  |
| hypothetical protein | 53010_at   | Homo sapiens mRNA full length insert cDNA clone EUROMAGE 2068071 | 114794_at | AA653185  | -         | -         | B | 90.60% | RKEN cDNA 2310071E16 gene Putative Ortholog (highly conserved)    | 1    | P | 0.48 | A | 0.93 | A | -  |
| hypothetical protein | 53061_at   | Homo sapiens cDNA FLJ21425 fl. clone COLDA162                    | none      | -         | -         | -         | - | -      | -   | -    | - | -    | - | -    | - | -  |
| hypothetical protein | 54033_at   | Homo sapiens cDNA FLJ23547 fl. clone HSD00586                    | 92971_at  | AW125048  | -         | -         | A | 88.89% | RKEN cDNA 2210013L08 gene Putative Ortholog (highly conserved)    | 0.77 | A | 1.3  | A | 1.1  | P | -  |
| hypothetical protein | 54886_at   | Homo sapiens mRNA cDNA DKFZ434Q227 (from clone DKFZ434Q227)      | 102907_at | AW125043  | -         | -         | A | 93.95% | expressed sequence AY253284 Putative Ortholog                     | 1    | P | 0.83 | P | 0.83 | P | -  |
| hypothetical protein | 54897_at   | Homo sapiens cDNA FLJ31556 fl. clone NT2R002211                  | 114119_at | AW124823  | -         | -         | B | 92.44% | EST Putative Ortholog (highly conserved)                          | 1.3  | P | 1    | P | 0.71 | A | -  |
| hypothetical protein | 57050_at   | KIAA1268 protein   | 112671_at | AW122101  | -         | -         | B | 83.86% | clone MGC23930 IMAGE5055398, mRNA, complete cds Putative Ortholog | 1.4  | P | 1.4  | P | 1.2  | P | -  |
| hypothetical protein | 59516_at   | KIAA1268 protein   | 112671_at | AW122101  | -         | -         | B | 83.66% | clone MGC23930 IMAGE5055398, mRNA, complete cds Putative Ortholog | 1.4  | P | 1.4  | P | 1.2  | P | -  |
| hypothetical protein | 57694_at   | Homo sapiens cDNA FLJ22629 fl. clone HSD0179                     | none      | -         | -         | -         | - | -      | -   | -    | - | -    | - | -    | - | -  |
| hypothetical protein | 57896_at   | Homo sapiens cDNA FLJ22629 fl. clone HSD0180                     | none      | -         | -         | -         | - | -      | -   | -    | - | -    | - | -    | - | -  |
| hypothetical protein | 59039_at   | Homo sapiens cDNA FLJ14211 fl. clone OYARC1000533                | none      | -         | -         | -         | - | -      | -   | -    | - | -    | - | -    | - | -  |

| cat #                        | human    | mouse                                  | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Map Location | homology | name   | 1st P/A  | 2nd P/A | 3rd P/A | 3rd P/A | reference |     |   |                                      |
|------------------------------|----------|--|----------|---------------|---------------|--------------------|----------|--------|--|---------|---------|---------|-----------|-----|---|--------------------------------------|
| interferon-inducible protein | 48864_at | interferon, alpha-inducible protein 27 | none     | -             | -             | -                  | -        | -      | -  | -       | -       | -       | -         |     |   |                                      |
| interferon-inducible protein | 52815_at | guanylate binding protein 5            | 95974_at | M45544        | NM_010259     | NP_034389          | A        | 91.89% | guanylate nucleotide binding protein 1 Putative Ortholog | 2.9     | P       | 1.8     | P         | 1.1 | P | Mol. Cell. Biol. 11:4171-4175 (1991) |

| cat #     | human    | mouse                            | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Map Location | homology | name   | 1st P/A                           | 2nd P/A | 3rd P/A | 3rd P/A | reference |   |   |                                     |
|-----------|----------|----------------------------------|----------|---------------|---------------|--------------------|----------|--------|-----------------------------------|---------|---------|---------|-----------|---|---|-------------------------------------|
| 10 kinase | 48035_at | A kinase (PRKA) anchor protein 2 | AF033375 | NM_009649     | NP_033779     | -                  | A        | 92.21% | A kinase anchor protein 2 Homolog | 0.83    | P       | 0.83    | P         | 1 | P | J. Biol. Chem. 273:6533-6541 (1998) |
| 10 kinase | 51055_at | CamK-like protein kinase         | AA060013 | -             | -             | -                  | -        | 91.40% | ESTs                              | -       | -       | -       | -         | - | - | -                                   |

Table 52

| cat # | category | human    | mouse    | mouse Ref Seq | mouse Map Location | chip ID  | homology | name   | 1st  | 2nd | 3rd  | 3rd reference                           |
|-------|----------|----------|----------|---------------|--------------------|----------|----------|--------|------|-----|------|---|
| 10    | kinase   | 51923.at | AF06748  | NM_011451     | NP_035581          | -        | A        | 57.3%  | 0.42 | A   | 0.77 | A J. Biol. Chem. 273 (1998) 23722-23728 |
| 10    | kinase   | 51923.at | AV250526 | NM_011451     | NP_035581          | -        | B        | 57.3%  | 2.2  | A   | 1.3  | A J. Biol. Chem. 273 (1998) 23722-23728 |
| 10    | kinase   | 56474.at | AV354094 | NM_030704     | NP_106629          | 5 590 cm | A        | 90.48% | 0.35 | A   | 0.77 | A Meth. Enzymol. 303:19-44 (1999)       |
| 10    | kinase   | 56474.at | AV354094 | NM_030704     | NP_106629          | 5 590 cm | A        | 90.48% | 0.5  | P   | 0.91 | P Meth. Enzymol. 303:19-44 (1999)       |

| cat # | category         | human    | mouse    | mouse Ref Seq | mouse Map Location | chip ID | homology | name   | 1st | 2nd  | 3rd  | 3rd reference                        |
|-------|------------------|----------|----------|---------------|--------------------|---------|----------|--|-----|------|------|--------------------------------------|
| 12    | membrane protein | 48260.at | AB043114 | NM_016574     | NP_057883          | -       | A        | 92.68%   | 1.1 | 1.6  | 1.4  | A J. Cell Biol. 141:1539-1550 (1998) |
| 12    | membrane protein | 48260.at | AF072127 | NM_016574     | NP_057883          | -       | A        | 92.68%   | 1.1 | 0.53 | 1.2  | A J. Cell Biol. 141:1539-1550 (1998) |
| 12    | membrane protein | 50320.at | M80206   | NM_008950     | NP_033016          | 7 90 cm | A        | poliovirus sensitivity Curated Ortholog  | 1   | P    | 0.77 | P J. Virol. 66:2807-2813 (1992)      |
| 12    | membrane protein | 50320.at | AV369774 | NM_008950     | NP_033016          | 7 90 cm | B        | poliovirus sensitivity Curated Ortholog  | 1.5 | A    | 3.1  | A J. Virol. 66:2807-2813 (1992)      |
| 12    | membrane protein | 50320.at | D26107   | NM_008950     | NP_033016          | 7 90 cm | A        | poliovirus sensitivity Curated Ortholog  | 1   | P    | 1.2  | P J. Virol. 66:2807-2813 (1992)      |
| 12    | membrane protein | 51628.at | AA881022 | -             | -                  | -       | B        | ESTs, Moderately similar to extracellular glycoprotein EMILIN-2 precursor Putative Ortholog (highly conserved) | 1   | A    | 1.3  | P -                                  |
| 12    | membrane protein | 51628.at | AV223427 | -             | -                  | -       | C        | ESTs, Moderately similar to extracellular glycoprotein EMILIN-2 precursor Putative Ortholog (highly conserved) | 2   | A    | 0.48 | A 0.91 A -                           |

| cat # | category    | human    | mouse    | mouse Ref Seq | mouse Map Location | chip ID | homology | name   | 1st  | 2nd | 3rd | 3rd reference     |
|-------|-------------|----------|----------|---------------|--------------------|---------|----------|--------|------|-----|-----|-------------------|
| 16    | oncogenesis | 50389.at | AA727483 | NM_018831     | NP_061339          | -       | B        | 92.68% | 0.77 | P   | 1.1 | P -               |
| 16    | oncogenesis | 52187.at | AW214142 | NM_030253     | NP_084529          | -       | B        | 87.70% | 1.4  | P   | 1.6 | P Unpublished - 0 |

| cat # | category | human    | mouse    | mouse Ref Seq | mouse Map Location | chip ID | homology | name                              | 1st | 2nd | 3rd | 3rd reference                        |
|-------|----------|----------|----------|---------------|--------------------|---------|----------|-----------------------------------|-----|-----|-----|--------------------------------------|
| 17    | others   | 44583.at | AA170781 | NM_018831     | NP_061339          | -       | B        | SAM domain and HD domain, 1       | 1.2 | A   | 0.3 | A J. Leukoc. Biol. 57:477-483 (1995) |
| 17    | others   | 44589.at | U16435   | NM_018831     | NP_061339          | -       | A        | SAM domain and HD domain, 1       | 1.3 | P   | 1.3 | P J. Leukoc. Biol. 57:477-483 (1995) |
| 17    | others   | 46278.at | AW742692 | -             | -                  | -       | -        | expressed sequence AW742692       | -   | -   | -   | -                                    |
| 17    | others   | 46368.at | AA431004 | NM_025872     | NP_080148          | -       | C        | RKEN cDNA 2310041A22 gene Homolog | 0.4 | A   | 3.3 | A Meth. Enzymol. 303:19-44 (1999)    |



Table 53

|    |        |          |   |    |           |          |           |           |   |   |        |   |      |   |      |   |      |   |                                      |
|----|--------|----------|---|----|-----------|----------|-----------|-----------|---|---|--------|---|------|---|------|---|------|---|--------------------------------------|
| 17 | others | 48368.at | CGI-141 protein   | 49 | 107906.at | A0316570 | NM_025372 | NP_080148 | - | B | 95.0%  | RIKEN cDNA 2310081A22 gene Homolog  | 0.83 | A | 1.2  | A | 0.59 | A | Meth. Enzymol. 303:19-44 (1999)      |
| 17 | others | 50094.at | serum deprivation response (phosphotyrosine-binding protein)  | 50 | 165304.at | AV245062 | NM_138741 | NP_620680 | - | B | 91.41% | ESTs. Weakly similar to polymerase (transcript release factor (Musculus)) Putative Ortholog (highly conserved)                  | 1.8  | A | 1.2  | A | 1.3  | A | Cell Growth Differ. 4:755-760 (1993) |
| 17 | others | 50094.at | serum deprivation response (phosphotyrosine-binding protein)  | 51 | 160373.at | A033175  | NM_138741 | NP_620680 | - | A | 91.41% | ESTs. Weakly similar to polymerase (transcript release factor (Musculus)) Putative Ortholog (highly conserved)                  | 1    | P | 0.67 | P | 0.63 | P | Cell Growth Differ. 4:755-760 (1993) |
| 17 | others | 50395.at | chromosome 12 open reading frame 5                            | 52 | 111290.at | A084309  | -         | -         | - | B | 82.03% | ESTs. Weakly similar to SPT185 hypothetical protein YOR283w - yeast (Saccharomyces cerevisiae) [Sacchariales] Putative Ortholog | 1.9  | A | 1.9  | A | 1.5  | A | -                                    |
| 17 | others | 50395.at | chromosome 12 open reading frame 5                            | 53 | 166340.at | AA793651 | -         | -         | - | C | 82.03% | ESTs. Weakly similar to SPT185 hypothetical protein YOR283w - yeast (Saccharomyces cerevisiae) [Sacchariales] Putative Ortholog | 0.33 | A | 1.6  | A | 0.4  | A | -                                    |
| 17 | others | 51235.at | NEDD8 ultimate busten-1                                       | 54 | 165319.at | AV270997 | NM_016736 | NP_058016 | - | B | 93.27% | RIKEN cDNA 4531404021 gene Putative Ortholog  | 2.4  | A | 1    | A | 0.91 | A | -                                    |
| 17 | others | 59657.at | chromosome 21 open reading frame 11                           | 55 | 168781.at | AV258601 | NM_020922 | NP_058147 | - | C | 82.50% | RIKEN cDNA 9030924C24 gene Putative Ortholog  | 0.44 | A | 0.91 | A | 0.91 | P | Genomics 78 (1-2), 46-54 (2001)      |
| 17 | others | 59657.at | chromosome 21 open reading frame 11                           | 56 | 161580.at | AV314620 | NM_016736 | NP_058018 | - | A | -      | NY-REN-18 antigen Curated Ortholog  | 0.91 | A | 0.53 | A | 0.91 | A | Genome Res. 10:1617-1630 (2000)      |
| 17 | others | 59657.at | chromosome 21 open reading frame 11                           | 57 | 100570.at | U27462   | NM_016736 | NP_058018 | - | A | -      | NY-REN-18 antigen Curated Ortholog  | 0.77 | P | 0.83 | P | 0.91 | P | Genome Res. 10:1617-1630 (2000)      |
| 17 | others | 52675.at | similar to Junction-modulating and regulator protein p300 JMY |    | none      |          |           |           |   |   |        |   | -    | - | -    | - | -    | - |                                      |

| cell # | category | human    | Probe ID                                     | title | #         | mouse    | Probe ID  | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Ref Seq | mouse Map Location                          | chp ID | homology | name | 1st P/A | 2nd P/A | 3rd P/A | 3rd reference |   |   |                                  |
|--------|----------|----------|--|-------|-----------|----------|-----------|-----------|---------------|---------------|---------------|---|--------|----------|------|---------|---------|---------|---------------|---|---|----------------------------------|
| 18     | P450     | 47627.at | cytochrome P450, subfamily B5, polypeptide 1 | 58    | 104550.at | AW123273 | NM_028375 | NP_083051 | -             | A             | 87.01%        | RIKEN cDNA 120001C15 gene Putative Ortholog |        |          |      | 0.91    | P       | 0.71    | P             | 1 | P | Meth. Enzymol. 303, 19-44 (1999) |

| cell # | category        | human    | Probe ID                       | title | #        | mouse    | Probe ID  | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Ref Seq | mouse Map Location   | chp ID | homology | name | 1st P/A | 2nd P/A | 3rd P/A | 3rd reference |      |   |                                   |
|--------|-----------------|----------|--------------------------------|-------|----------|----------|-----------|-----------|---------------|---------------|---------------|--|--------|----------|------|---------|---------|---------|---------------|------|---|-----------------------------------|
| 20     | protein binding | 48838.at | JAK binding protein            | 59    | 92832.at | U88325   | NM_009396 | NP_034025 | -             | A             | 90.16%        | cytokine inducible SH2-containing protein 1 Curated Ortholog |        |          |      | 1.6     | A       | 1.9     | A             | 1.5  | P | Mol. Reprod. Dev. 43:1-5 (1995)   |
| 20     | protein binding | 47500.at | c-myc promoter-binding protein | 60    | 93281.at | AF049125 | NM_011982 | NP_036122 | -             | A             | 90.68         | reticulocalbin 2 Putative Ortholog                           |        |          |      | 0.91    | P       | 0.83    | P             | 0.91 | P | J. Neurochem. 84:2339-2344 (1995) |

| cell # | category   | human    | Probe ID                       | title | #        | mouse    | Probe ID  | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Ref Seq | mouse Map Location                               | chp ID | homology | name | 1st P/A | 2nd P/A | 3rd P/A | 3rd reference |      |   |                                     |
|--------|------------|----------|--------------------------------|-------|----------|----------|-----------|-----------|---------------|---------------|---------------|--|--------|----------|------|---------|---------|---------|---------------|------|---|-------------------------------------|
| 21     | proteinase | 51972.at | ubiquitin specific protease 18 | 61    | 95024.at | AW047653 | NM_011909 | NP_036039 | 656.0 cl      | A             | 87.9%         | ubiquitin specific protease 18 Putative Ortholog |        |          |      | 1.3     | P       | 2.9     | P             | 0.77 | P | Mol. Cell Biol. 13:3029-3038 (1993) |

| cell # | category | human | Probe ID | title | # | mouse | Probe ID | GenBank | mouse Ref Seq | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chp ID | homology | name | 1st P/A | 2nd P/A | 3rd P/A | 3rd reference |  |  |  |
|--------|----------|-------|----------|-------|---|-------|----------|---------|---------------|---------------|---------------|--------------------|--------|----------|------|---------|---------|---------|---------------|--|--|--|
|        |          |       |          |       |   |       |          |         |               |               |               |                    |        |          |      |         |         |         |               |  |  |  |

Table 54

|    |                     |          |   |    |             |          |           |           |           |   |        |  |      |   |      |   |      |   |                                  |
|----|---------------------|----------|---|----|-------------|----------|-----------|-----------|-----------|---|--------|--|------|---|------|---|------|---|----------------------------------|
| 24 | signal transduction | 55059.at | cytokine inducible SH2-containing protein | 62 | 162383.r.at | AV248632 | NM_008995 | NP_034025 | 9 59.0 cM | A | 87.36% | cytokine inducible SH2-containing protein Curated Ortholog | 0.24 | A | 1.7  | A | 0.12 | A | EMBO J. 14:2816-2826 (1995)      |
| 24 | signal transduction | 55059.at | cytokine inducible SH2-containing protein | 63 | 100022.at   | D89613   | NM_008995 | NP_034025 | 9 59.0 cM | A | 87.36% | cytokine inducible SH2-containing protein Curated Ortholog | 1.2  | P | 1.5  | P | 1.5  | P | EMBO J. 14:2816-2826 (1995)      |
| 24 | signal transduction | 55107.at | EH-domain containing 3                    | 64 | 115395.at   | AW212285 | NM_020378 | NP_065803 | -         | B | 90.91% | EH-domain containing 3 Homolog                             | 0.23 | A | 0.48 | A | 0.77 | A | Unpublished - O                  |
| 24 | signal transduction | 59793.at | 4-1BB-mediated signaling molecule         | 65 | 163326.i.at | A1816268 | NM_027178 | NP_081454 | -         | B | 88.42% | RIKEN cDNA 2410005L11 gene Homolog                         | 1.1  | A | 1.3  | A | 0.71 | A | Math. Enzymol. 303, 19-44 (1999) |

| cat # | category           | Probe ID | human title                             | mouse |                |          |               | MASME          |                    |         |          | reference |  |         |         |         |   |     |   |                 |
|-------|--------------------|----------|---|-------|----------------|----------|---------------|----------------|--------------------|---------|----------|-----------|--|---------|---------|---------|---|-----|---|-----------------|
|       |                    |          |   | #     | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | chip ID | homology |           | name   | 1st P/A | 2nd P/A | 3rd P/A |   |     |   |                 |
| 25    | structural protein | 48684.at | Type I intermediate filament cyokeratin | 66    | 163157.at      | A1806261 | NM_033373     | NP_208537      | -                  | B       | -        | -         | type I intermediate filament cyokeratin Curated Ortholog | 1.5     | P       | 0.77    | P | 1.4 | P | Unpublished - O |

| cat # | category             | Probe ID | human title                    | mouse |                |          |               | MASME          |                    |         |          | reference  |      |         |         |         |      |   |                                   |
|-------|----------------------|----------|--------------------------------|-------|----------------|----------|---------------|----------------|--------------------|---------|----------|--|------|---------|---------|---------|------|---|-----------------------------------|
|       |                      |          |                                | #     | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | chip ID | homology |  | name | 1st P/A | 2nd P/A | 3rd P/A |      |   |                                   |
| 26    | transcription factor | 43350.at | interferon regulatory factor 7 | -     | -              | -        | NM_016850     | NP_058548      | 7 F4               | -       | 79.90%   | interferon regulatory factor 7                                   | -    | -       | -       | -       | -    | - | Math. Enzymol. 303, 19-44 (1999)  |
| 26    | transcription factor | 48587.at | Kruppel-like factor 4 (put)    | 67    | 161185.i.at    | AV235936 | NM_010637     | NP_034787      | 4 19.7 cM          | A       | 89.29%   | Kruppel-like factor 4 (put) Putative Ortholog (highly conserved) | 0.77 | A       | 1.5     | A       | 1    | A | J. Biol. Chem. 271:9-20017 (2000) |
| 26    | transcription factor | 48587.at | Kruppel-like factor 4 (put)    | 68    | 99622.at       | U20344   | NM_010637     | NP_034787      | 4 19.7 cM          | A       | 89.29%   | Kruppel-like factor 4 (put) Putative Ortholog (highly conserved) | 1    | P       | 0.83    | P       | 0.77 | P | J. Biol. Chem. 271:9-20017 (2000) |

| cat # | category | Probe ID | human title   | mouse |                |          |               | MASME          |                    |         |          | reference   |      |         |         |         |      |   |   |
|-------|----------|----------|---|-------|----------------|----------|---------------|----------------|--------------------|---------|----------|---|------|---------|---------|---------|------|---|---|
|       |          |          |   | #     | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | chip ID | homology |   | name | 1st P/A | 2nd P/A | 3rd P/A |      |   |   |
|       |          | 42302.at | ESTs  |       | none           |          |               |                |                    |         | -        | -   | -    | -       | -       | -       | -    | - |   |
|       |          | 42721.at | ESTs  |       | none           |          |               |                |                    |         | -        | -   | -    | -       | -       | -       | -    | - |   |
|       |          | 43438.at | w883d12.1 Homo sapiens cDNA, 3' end / clone IMAGE-2338189 |       | none           |          |               |                |                    |         |          |   |      |         |         |         |      |   |   |
|       |          | 45606.at | ESTs  | 69    | 161081.at      | AA73664  | -             | -              | -                  | A       | 99.37%   | ESTs Putative Ortholog (highly conserved)                       | 0.81 | P       | 0.83    | P       | 1.2  | P | - |
|       |          | 46120.at | ESTs  |       | none           |          |               |                |                    |         | -        | -   | -    | -       | -       | -       | -    | - |   |
|       |          | 46378.at | ESTs  |       | none           |          |               |                |                    |         | -        | -   | -    | -       | -       | -       | -    | - |   |
|       |          | 47282.at | Homo sapiens cDNA, 3' end                                 |       | none           |          |               |                |                    |         | -        | -   | -    | -       | -       | -       | -    | - |   |
|       |          | 47390.at | ESTs  |       | none           |          |               |                |                    |         | -        | -   | -    | -       | -       | -       | -    | - |   |
|       |          | 51024.at | ESTs  |       | none           |          |               |                |                    |         | -        | -   | -    | -       | -       | -       | -    | - |   |
|       |          | 54922.at | ESTs  | 70    | 95020.at       | A1846868 | -             | -              | -                  | A       | 93.72%   | RIKEN cDNA 9130415E20 gene Putative Ortholog (highly conserved) | 0.81 | P       | 0.81    | P       | 0.83 | P | - |
|       |          | 55491.at | ESTs  |       | none           |          |               |                |                    |         | -        | -   | -    | -       | -       | -       | -    | - |   |

Table 55

| human    | mouse   | MASIV5     |            |            |           |     |   |   |
|----------|---|------------|------------|------------|-----------|-----|---|---|
| Probe ID | Probe ID  | 1st<br>P/A | 2nd<br>P/A | 3rd<br>P/A | reference |     |   |   |
| 63347_at | enhancer of filamentation 1 (cas-like docking, Ck-associated substrate related) | 1          | P          | 0.7        | P         | 0.8 | P | Biochem. Biophys. Res. Commun. 185:1165-1161 (1992) |

| human    | mouse   | MASIV5     |            |            |           |     |   |                                 |
|----------|---|------------|------------|------------|-----------|-----|---|---------------------------------|
| Probe ID | Probe ID  | 1st<br>P/A | 2nd<br>P/A | 3rd<br>P/A | reference |     |   |                                 |
| 48656_at | C1q and tumor necrosis factor related protein 1 | 0.3        | A          | 0.6        | A         | 1.2 | A | Genome Res. 10:1617-1630 (2000) |
| 48656_at | C1q and tumor necrosis factor related protein 1 | 0.2        | A          | 0.2        | A         | 0.3 | A | Genome Res. 10:1617-1630 (2000) |
| 48656_at | C1q and tumor necrosis factor related protein 1 | 0.8        | A          | 2.4        | A         | 1.3 | A | Genome Res. 10:1617-1630 (2000) |
| 48656_at | C1q and tumor necrosis factor related protein 1 | 0.8        | A          | 0.7        | A         | 0.7 | A | Genome Res. 10:1617-1630 (2000) |
| 48656_at | C1q and tumor necrosis factor related protein 1 | 1.2        | A          | 1          | M         | 0.8 | A | Genome Res. 10:1617-1630 (2000) |

| human    | mouse                | MASIV5     |            |            |           |   |   |                                       |
|----------|----------------------|------------|------------|------------|-----------|---|---|---------------------------------------|
| Probe ID | Probe ID             | 1st<br>P/A | 2nd<br>P/A | 3rd<br>P/A | reference |   |   |                                       |
| 82213_at | lysyl oxidase-like 4 | -          | -          | -          | -         | - | - | Genome Res. 10 (10): 1617-1630 (2000) |

| human    | mouse                         | MASIV5     |            |            |           |     |   |   |
|----------|-------------------------------|------------|------------|------------|-----------|-----|---|---|
| Probe ID | Probe ID                      | 1st<br>P/A | 2nd<br>P/A | 3rd<br>P/A | reference |     |   |   |
| 48146_at | DKFZP564I1171 protein         | -          | -          | -          | -         | -   | - |   |
| 53497_at | FLJ23044 fs, clone LNC02454   | 1.4        | A          | 1.3        | A         | 0.8 | A | - |
| 56608_at | KIA0592 protein               | -          | -          | -          | -         | -   | - |   |
| 60001_at | hypothetical protein FLJ23132 | 0.8        | P          | 2.3        | M         | 1.6 | A | - |
| 60001_at | hypothetical protein FLJ23132 | 1.7        | P          | 0.8        | P         | 1.1 | A | - |
| 60001_at | hypothetical protein FLJ23132 | 1          | P          | 0.9        | P         | 1   | P | - |
| 60001_at | hypothetical protein FLJ23132 | 1.1        | P          | 1.6        | P         | 1.1 | A | - |

| human          |          | mouse                    |    |                   |          |                  |                       |            |          |   |            | MAS5       |            |           |  |
|----------------|----------|--------------------------|----|-------------------|----------|------------------|-----------------------|------------|----------|---|------------|------------|------------|-----------|--|
| category       | Probe ID | title                    | #  | mouse<br>Probe ID | GenBank  | mouse Ref<br>Seq | mouse Map<br>Location | chip<br>ID | homology | name  | 1st<br>P/A | 2nd<br>P/A | 3rd<br>P/A | reference |  |
| 16 oncogenesis | 65963 at | Melanoma associated gene | 21 | 107575 at         | A4980935 | -                | -                     | B          | 88.8%    | RIXEN cDNA 2310075M15 gene<br>Dutiride, Orbeton | 0.9        | P          | 0.8        | P -       |  |

Table 57

| cat# | category | human      |                                  | mouse |                |          |               |                |                    |         | MASM5    |   |         | reference |         |   |
|------|----------|------------|----------------------------------|-------|----------------|----------|---------------|----------------|--------------------|---------|----------|---|---------|-----------|---------|---|
|      |          | Probe ID   | title                            | #     | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | chip ID | homology | name  | 1st P/A |           | 2nd P/A | 3rd P/A   |
| 17   | others   | 61871_r.at | WW45 protein                     | 22    | 169317_at      | A004941  | NM_022028     | NP_071311      | 12 C3              | C       | 92.62%   | WW domain-containing protein 3 Homolog  | 1.4     | A 0.8     | A 1.8   | Biochem. Biophys. Res. Commun. 276:990-998 (2000) |
| 17   | others   | 61871_r.at | WW45 protein                     | 23    | 111119_at      | AA764217 | NM_022028     | NP_071311      | 12 C3              | B       | 92.62%   | WW domain-containing protein 3 Homolog  | 1       | A 1.9     | A 1.1   | Biochem. Biophys. Res. Commun. 276:990-998 (2000) |
| 17   | others   | 61871_r.at | WW45 protein                     | 24    | 111162_f.at    | AA014158 | NM_022028     | NP_071311      | 12 C3              | B       | 92.62%   | WW domain-containing protein 3 Homolog  | 1       | P 0.6     | A 1.1   | M (2000)  |
| 17   | others   | 61871_r.at | WW45 protein                     | 25    | 114337_at      | AW122502 | NM_022028     | NP_071311      | 12 C3              | B       | 92.62%   | WW domain-containing protein 3 Homolog  | 1       | P 0.9     | P 1.1   | P (2000)  |
| 17   | others   | 61871_r.at | WW45 protein                     | 26    | 112893_at      | AB42196  | NM_022028     | NP_071311      | 12 C3              | B       | 92.62%   | WW domain-containing protein 3 Homolog  | 1.1     | P 1.2     | P 0.9   | P (2000)  |
| 17   | others   | 65587_at   | WW45 protein                     | 22    | 169317_at      | A004941  | NM_022028     | NP_071311      | 12 C3              | C       | 92.62%   | WW domain-containing protein 3 Homolog  | 1.4     | A 0.8     | A 1.8   | A (2000)  |
| 17   | others   | 65587_at   | WW45 protein                     | 23    | 111119_at      | AA764217 | NM_022028     | NP_071311      | 12 C3              | B       | 92.62%   | WW domain-containing protein 3 Homolog  | 1       | A 1.9     | A 1.1   | A (2000)  |
| 17   | others   | 65587_at   | WW45 protein                     | 24    | 111162_f.at    | AA014158 | NM_022028     | NP_071311      | 12 C3              | B       | 92.62%   | WW domain-containing protein 3 Homolog  | 1       | P 0.6     | A 1.1   | M (2000)  |
| 17   | others   | 65587_at   | WW45 protein                     | 25    | 114337_at      | AW122502 | NM_022028     | NP_071311      | 12 C3              | B       | 92.62%   | WW domain-containing protein 3 Homolog  | 1       | P 0.9     | P 1.1   | P (2000)  |
| 17   | others   | 65587_at   | WW45 protein                     | 26    | 112893_at      | AB42196  | NM_022028     | NP_071311      | 12 C3              | B       | 92.62%   | WW domain-containing protein 3 Homolog  | 1.1     | P 1.2     | P 0.9   | P (2000)  |
| 17   | others   | 64368_s.at | leucine-rich repeat-containing 5 | 27    | 115316_at      | A1550677 | -             | -              | -                  | B       | 90.00%   | Highly similar to hypothetical protein FLJ10470 (Homo sapiens) [traspinea] Putative Ortholog (highly conserved) | 0.2     | A 0.5     | A 3.4   | A -   |
| 17   | others   | 64368_s.at | leucine-rich repeat-containing 5 | 28    | 168371_f.at    | AV254276 | -             | -              | -                  | C       | 90.00%   | Highly similar to hypothetical protein FLJ10470 (Homo sapiens) [traspinea] Putative Ortholog (highly conserved) | 1       | P 1.1     | P 1.2   | P -   |
| 17   | others   | 64368_s.at | leucine-rich repeat-containing 5 | 29    | 105282_at      | AA914186 | -             | -              | -                  | B       | 90.00%   | Highly similar to hypothetical protein FLJ10470 (Homo sapiens) [traspinea] Putative Ortholog (highly conserved) | 1       | P 1.5     | P 1.1   | P -   |
| 17   | others   | 64368_s.at | leucine-rich repeat-containing 5 | 30    | 169490_at      | AB62368  | -             | -              | -                  | C       | 90.00%   | Highly similar to hypothetical protein FLJ10470 (Homo sapiens) [traspinea] Putative Ortholog (highly conserved) | 1.6     | A 0.8     | A 1.9   | P -   |
| 17   | others   | 64719_at   | H4 histone, family 2             |       | NONE           |          |               |                |                    |         |          |   | -       | -         | -       | -   |
| 17   | others   | 65708_at   | HSPC019 protein                  | 31    | 114263_at      | AW121271 | -             | -              | -                  | B       | 91.43%   | RIKEN cDNA 120002H13 gene Putative Ortholog   | 1       | P 1.2     | P 1.1   | P -   |

| cat# | category | human    |       | mouse |                |         |               |                |                    |         | MASM5    |      |         | reference |
|------|----------|----------|-------|-------|----------------|---------|---------------|----------------|--------------------|---------|----------|------|---------|-----------|
|      |          | Probe ID | title | #     | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | chip ID | homology | name | 1st P/A |           |

Table 58

|    |            |          |                                  |    |             |          |           |           |           |   |        |  |     |   |     |   |     |   |   |
|----|------------|----------|----------------------------------|----|-------------|----------|-----------|-----------|-----------|---|--------|--|-----|---|-----|---|-----|---|---|
| 21 | proteinase | 63225_at | transmembrane protease, serine 2 | 32 | 09565_s_at  | AA058946 | NM_015775 | NP_056590 | 16        | B | 85.12% | transmembrane protease, serine 2 Homolog | 1.2 | P | 1.2 | P | 1.1 | P | FEBS Lett. 468:93-100 (2000)                    |
| 21 | proteinase | 63225_at | transmembrane protease, serine 2 | 33 | 131180_at   | A1607876 | NM_015775 | NP_056590 | 16        | C | 85.12% | transmembrane protease, serine 2 Homolog | 0.9 | A | 1.2 | A | 1.3 | A | FEBS Lett. 468:93-100 (2000)                    |
| 21 | proteinase | 63225_at | transmembrane protease, serine 2 | 34 | 164520_f.at | AV202474 | NM_015775 | NP_056590 | 16        | B | 85.12% | transmembrane protease, serine 2 Homolog | 1.2 | P | 1.4 | P | 1.2 | P | FEBS Lett. 468:93-100 (2000)                    |
| 21 | proteinase | 63866_at | cathepsin C                      | 35 | 101013_at   | U74683   | NM_029882 | NP_034112 | 7 D3-E1.1 | A |        | cathepsin C Curated Ortholog             | 1.2 | P | 1.1 | P | 1   | P | Biochim. Biophys. Acta 1351 (3): 267-273 (1997) |
| 21 | proteinase | 63866_at | cathepsin C                      | 36 | 161251_f.at | AV316954 | NM_029882 | NP_034112 | 7 D3-E1.1 | A |        | cathepsin C Curated Ortholog             | 0.7 | A | 1   | A | 1.2 | A | Biochim. Biophys. Acta 1351 (3): 267-273 (1997) |
| 21 | proteinase | 63866_at | cathepsin C                      | 37 | 101020_at   | A1842657 | NM_029882 | NP_034112 | 7 D3-E1.1 | A |        | cathepsin C Curated Ortholog             | 1.8 | A | 0.6 | A | 0.9 | A | Biochim. Biophys. Acta 1351 (3): 267-273 (1997) |

| cat# | category            | human    | Probe ID      | title | # | mouse | Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | mouse chip ID | homology | name                                       | 1st | 2nd | 3rd | reference                              |
|------|---------------------|----------|---------------|-------|---|-------|----------|----------|---------------|----------------|--------------------|---------------|----------|--|-----|-----|-----|--|
| 24   | signal transduction | 63322_at | B7-H1 protein |       | - | -     | -        | AF233517 | NM_021893     | NP_068593      | 19 C2              | -             | -        | programmed cell death 1 ligand 1 (Pcdl1g1) | -   | -   | -   | J. Exp. Med. 192 (7): 1027-1034 (2000) |

| cat# | category           | human      | Probe ID                                | title | #  | mouse     | Probe ID | GenBank   | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | mouse chip ID | homology  | name                                      | 1st | 2nd | 3rd | reference |     |                   |   |
|------|--------------------|------------|---|-------|----|-----------|----------|-----------|---------------|----------------|--------------------|---------------|---|---|-----|-----|-----|-----------|-----|-------------------|---|
| 25   | structural protein | 48694_at   | Type I intermediate filament cyokeratin |       | 38 | 163157_at | A1606261 | NM_033373 | NP_203537     | 11 D           | B                  | 84.22%        | type I intermediate filament cyokeratin Homolog | 1.5                                       | P   | 0.6 | P   | 1.4       | P   | Unpublished -- () |   |
| 25   | structural protein | 57654_s_at | slingshot 1                             |       | 39 | 128268_at | AW122522 | -         | -             | -              | -                  | C             | 92.08%  | ESTs Putative Ortholog (highly conserved) | 0.8 | A   | 1   | P         | 0.7 | A                 | - |

| cat# | category | human | Probe ID | title  | #  | mouse       | Probe ID | GenBank   | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | mouse chip ID | homology   | name | 1st | 2nd | 3rd | reference |   |                                 |
|------|----------|-------|----------|--|----|-------------|----------|-----------|---------------|----------------|--------------------|---------------|--|------|-----|-----|-----|-----------|---|---------------------------------|
|      |          |       | 60246_at | Homo sapiens, clone IMAGE:4428577, mRNA, partial cds | 40 | 103065_at   | L32873   | NM_020557 | NP_065582     | 12 6.0 cM      | A                  | 87.32%        | thymidylate kinase family LPS-inducible member Putative Ortholog | 1.3  | A   | 2.1 | A   | 0.7       | A | Math. Enzymol. 303:19-44 (1999) |
|      |          |       | 60246_at | Homo sapiens, clone IMAGE:4428577, mRNA, partial cds | 41 | 161186_f.at | AV246084 | NM_020557 | NP_065582     | 12 6.0 cM      | A                  | 87.32%        | thymidylate kinase family LPS-inducible member Putative Ortholog | 0.8  | A   | 1.6 | A   | 1.4       | A | Math. Enzymol. 303:19-44 (1999) |
|      |          |       | 62320_at | ESTs   |    | none        |          |           |               |                |                    |               |  |      | -   | -   | -   |           |   |                                 |
|      |          |       | 62828_at | ESTs   |    | none        |          |           |               |                |                    |               |  |      | -   | -   | -   |           |   |                                 |
|      |          |       | 65457_at | ESTs   |    | none        |          |           |               |                |                    |               |  |      | -   | -   | -   |           |   |                                 |
|      |          |       | 66392_at | ESTs   |    | none        |          |           |               |                |                    |               |  |      | -   | -   | -   |           |   |                                 |
|      |          |       | 66999_at | ESTs   |    | none        |          |           |               |                |                    |               |  |      | -   | -   | -   |           |   |                                 |

Table 59

| cat# | category | human    |                                   | mouse |                |          |               |                |                    |          |       |   |     | MASMS |     |                          |
|------|----------|----------|-----------------------------------|-------|----------------|----------|---------------|----------------|--------------------|----------|-------|---|-----|-------|-----|--------------------------|
|      |          | Probe ID | title                             | #     | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | homology | name  | mouse Map chip ID                                     | 1st | 2nd   | 3rd | reference                |
| 7    | enzyme   | 75024_at | adenosine deaminase, RNA-specific | 1     | 102741_at      | AW040250 | NM_019855     | NP_062829      | 3                  | A        | 87.4% | adenosine deaminase, RNA-specific<br>Curated Ortholog | 1.8 | A     | 1.1 | A 1.2 A Unpublished -- 0 |
| 7    | enzyme   | 75024_at | adenosine deaminase, RNA-specific | 2     | 98188_at       | AF055506 | NM_019855     | NP_062829      | 3                  | A        | 87.4% | adenosine deaminase, RNA-specific<br>Homolog          | 1.9 | P     | 1.2 | P 1.4 P Unpublished -- 0 |
| 7    | enzyme   | 78337_at | dual oxidase 2                    |       | none           |          |               |                |                    |          |       |   | -   | -     | -   |                          |

| cat# | category             | human    |  | mouse |                |         |               |                |                    |          |      |                   |     | MASMS |     |           |
|------|----------------------|----------|--|-------|----------------|---------|---------------|----------------|--------------------|----------|------|-------------------|-----|-------|-----|-----------|
|      |                      | Probe ID | title  | #     | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | homology | name | mouse Map chip ID | 1st | 2nd   | 3rd | reference |
| 8    | hypothetical protein | 75423_at | Homo sapiens mRNA: cDNA DKFZ564N1184 (from clone DKFZ564N1184) |       | none           |         |               |                |                    |          |      |                   | -   | -     | -   |           |
| 8    | hypothetical protein | 75857_at | Homo sapiens cDNA FLJ13234 fis, clone PROST2005426             |       | none           |         |               |                |                    |          |      |                   | -   | -     | -   |           |
| 8    | hypothetical protein | 82008_at | Homo sapiens cDNA: FLJ21270 fis, clone COL01749                |       | none           |         |               |                |                    |          |      |                   | -   | -     | -   |           |
| 8    | hypothetical protein | 91951_at | Homo sapiens cDNA FLJ12136 fis, clone MAMMA1000312             |       | none           |         |               |                |                    |          |      |                   | -   | -     | -   |           |

| cat# | category                     | human    |                               | mouse |                |         |               |                |                    |          |      |                   |     | MASMS |     |           |
|------|------------------------------|----------|-------------------------------|-------|----------------|---------|---------------|----------------|--------------------|----------|------|-------------------|-----|-------|-----|-----------|
|      |                              | Probe ID | title                         | #     | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | homology | name | mouse Map chip ID | 1st | 2nd   | 3rd | reference |
| 9    | interferon-inducible protein | 74908_at | interferon-induced protein 35 |       | none           |         |               |                |                    |          |      |                   |     |       |     |           |

| cat# | category            | human    |   | mouse |                |         |               |                |                    |          |        |  |     | MASMS |     |   |
|------|---------------------|----------|---|-------|----------------|---------|---------------|----------------|--------------------|----------|--------|--|-----|-------|-----|---|
|      |                     | Probe ID | title   | #     | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | homology | name   | mouse Map chip ID  | 1st | 2nd   | 3rd | reference                                   |
| 24   | signal transduction | 89898_at | myxovirus (influenza) resistance 2, homolog of murine | 3     | 102899_at      | J03368  | NM_013606     | NP_038634      | 16 71.2 cM         | A        | 89.60% | myxovirus (influenza virus) resistance<br>1 Curated Ortholog | 1.2 | A     | 0.9 | P 1.3 A Mol. Cell. Biol. 8:4524-4528 (1988) |
| 24   | signal transduction | 89899_at | myxovirus (influenza) resistance 2, homolog of murine | 4     | 88417_at       | M21038  | NM_010846     | NP_034976      | 16 71.2 cM         | A        | 89.60% | myxovirus (influenza virus) resistance<br>1 Curated Ortholog | 1.1 | A     | 2.2 | A 3 A Cell 44:147-158 (1986)                |

| cat# | category | human    |  | mouse |                |         |               |                |                    |          |      |                   |     | MASMS |     |           |
|------|----------|----------|--|-------|----------------|---------|---------------|----------------|--------------------|----------|------|-------------------|-----|-------|-----|-----------|
|      |          | Probe ID | title  | #     | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | homology | name | mouse Map chip ID | 1st | 2nd   | 3rd | reference |
|      |          | 71157_at | ESTs, Weakly similar to T02670 probable thrombosane A2 receptor isoform beta [H.sapiens] |       | none           |         |               |                |                    |          |      |                   | -   | -     | -   |           |
|      |          | 75000_at | Homo sapiens cDNA, 3' end /clone IMAGE-2354811   |       | none           |         |               |                |                    |          |      |                   | -   | -     | -   |           |
|      |          | 80077_at | ESTs   |       | none           |         |               |                |                    |          |      |                   | -   | -     | -   |           |
|      |          | 80876_at | ESTs   |       | none           |         |               |                |                    |          |      |                   | -   | -     | -   |           |
|      |          | 81966_at | ESTs   |       | none           |         |               |                |                    |          |      |                   | -   | -     | -   |           |

Table 60

| human |               | mouse    |   |   |                |          |               |                |                    |         |          | MASMS  |         |         |         |           |   |
|-------|---------------|----------|---|---|----------------|----------|---------------|----------------|--------------------|---------|----------|--|---------|---------|---------|-----------|---|
| cat # | category      | Probe ID | title                                     | # | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | chip ID | homology | name   | 1st P/A | 2nd P/A | 3rd P/A | reference |   |
| 2     | cell adhesion | 90421_at | epithelial stromal interaction 1 (breast) | 1 | 134663_at      | A1592213 | -             | -              | -                  | C       | 90.23%   | RIKEN cDNA 5033415K03 gene Putative Ortholog | 1.7     | A       | 1.6     | A         | - |
| 2     | cell adhesion | 90421_at | epithelial stromal interaction 1 (breast) | 2 | 110160_at      | A1510217 | -             | -              | -                  | B       | 90.23%   | RIKEN cDNA 5033415K03 gene Putative Ortholog | 1.7     | P       | 1.6     | P         | - |

| human |           | mouse    |  |   |                |         |               |                |                    |         |          | MASMS |         |         |         |           |
|-------|-----------|----------|--|---|----------------|---------|---------------|----------------|--------------------|---------|----------|-------|---------|---------|---------|-----------|
| cat # | category  | Probe ID | title  | # | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | chip ID | homology | name  | 1st P/A | 2nd P/A | 3rd P/A | reference |
| 4     | chemokine | 90189_at | small inducible cytokine subfamily A (Cys-Cys) member 26 |   | none           |         |               |                |                    |         |          |       | -       | -       | -       | -         |

| human |          | mouse      |   |   |                |          |               |                |                    |         |          | MASMS   |         |         |         |   |   |
|-------|----------|------------|---|---|----------------|----------|---------------|----------------|--------------------|---------|----------|---|---------|---------|---------|---|---|
| cat # | category | Probe ID   | title   | # | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | chip ID | homology | name  | 1st P/A | 2nd P/A | 3rd P/A | reference                               |   |
| 7     | enzyme   | 72952_at   | Branched chain aminotransferase 1, cytosolic      |   | -              | U42443   | NM_007532     | NP_031556      | 6 73.9 cM          | -       | 0.84     | Branched-chain amino acid aminotransferase, cytosolic | -       | -       | -       | Nucleic Acids Res. 18 (22), 6709 (1990) |   |
| 7     | enzyme   | 72960_s_at | Branched chain aminotransferase 1, cytosolic      |   | -              | U42443   | NM_007533     | NP_031556      | 6 73.9 cM          | -       | 0.84     | Branched-chain amino acid aminotransferase, cytosolic | -       | -       | -       | Nucleic Acids Res. 18 (22), 6708 (1990) |   |
| 7     | enzyme   | 77749_at   | RNA helicase                                      |   | none           |          |               |                |                    |         |          |   |         |         |         |   |   |
| 7     | enzyme   | 77751_at   | glucosaminyl (N-acetyl) transferase 2, mucin type | 3 | 132609_at      | AA762185 | -             | -              | -                  | C       | 0.8833   | RIKEN cDNA 2010013422 gene Homolog                    | 0.91    | A       | 0.91    | A                                       | - |
| 7     | enzyme   | 90662_at   | 2'-5'-oligoadenylate synthetase 2 (69-71 kD)      |   | none           |          |               |                |                    |         |          |   | -       | -       | -       | -                                       |   |

| human |                      | mouse    |  |   |                |          |               |                |                    |         |          | MASMS   |         |         |         |           |                                   |
|-------|----------------------|----------|--|---|----------------|----------|---------------|----------------|--------------------|---------|----------|---|---------|---------|---------|-----------|-----------------------------------|
| cat # | category             | Probe ID | title  | # | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | chip ID | homology | name  | 1st P/A | 2nd P/A | 3rd P/A | reference |                                   |
| 8     | hypothetical protein | 67329_at | hypothetical protein FLJ22833                                  | 4 | 92509_at       | X80171   | NM_008877     | NP_032853      | 12 39.0 cM         | -       | -        | placental growth factor Putative Ortholog                               | 0.91    | A       | 0.63    | A         | 0.91 P Mamm. Genome 7:6-12 (1998) |
| 8     | hypothetical protein | 68562_at | Homo sapiens cDNA FLJ12135 fis, clone MAMMA1000312             |   | none           |          |               |                |                    |         |          |   | -       | -       | -       | -         |                                   |
| 8     | hypothetical protein | 72867_at | Homo sapiens mRNA: cDNA DKFZp434G227 (from clone MAMMA1000312) | 5 | 102307_at      | AW125043 | -             | -              | -                  | A       | 93.65%   | expressed sequence AV253284 Putative Ortholog                           | 1       | P       | 0.63    | P         | -                                 |
| 8     | hypothetical protein | 80876_at | Homo sapiens cDNA FLJ25184 fis, clone CBR05423                 |   | none           |          |               |                |                    |         |          |   | -       | -       | -       | -         |                                   |
| 8     | hypothetical protein | 83376_at | hypothetical protein FLJ20281                                  | 6 | 110028_at      | AW124281 | -             | -              | -                  | B       | 98.65%   | expressed sequence AW212015 Putative Ortholog                           | 0.56    | A       | 1.3     | A         | -                                 |
| 8     | hypothetical protein | 83376_at | hypothetical protein FLJ20281                                  | 7 | 112808_at      | A853680  | -             | -              | -                  | B       | 98.65%   | expressed sequence AW212015 Putative Ortholog                           | 1.1     | P       | 0.58    | P         | 0.91 A                            |
| 8     | hypothetical protein | 83541_at | KIAA1685 protein   | 8 | 116098_at      | A1648666 | -             | -              | -                  | B       | 91.41%   | ESTs, Highly similar to hypothetical protein FLJ10898 Putative Ortholog | 1       | P       | 1.3     | P         | 0.91 A                            |
| 8     | hypothetical protein | 83541_at | KIAA1685 protein   |   | 107796_at      | AW261774 | -             | -              | -                  | B       | 91.41%   | ESTs, Highly similar to hypothetical protein FLJ10898 Putative Ortholog | 1.1     | P       | 0.91    | P         | -                                 |



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Table 62

|    |        |          |   |    |           |          |           |           |    |         |        |   |      |   |      |   |      |   |   |
|----|--------|----------|---|----|-----------|----------|-----------|-----------|----|---------|--------|---|------|---|------|---|------|---|---|
| 17 | others | 85090.at | ets homologous factor                                 | 23 | 114753.at | AW215423 | NM_007914 | NP_031940 | 2  | B       | 92.68% | ets homologous factor Putative Ortholog (highly conserved)      | 1.1  | P | 1.1  | A | 1.3  | P | Biochem. Biophys. Res. Commun. 246:176-181 (1998) |
| 17 | others | 85090.at | ets homologous factor                                 | 24 | 110963.at | AU527695 | NM_007914 | NP_031940 | 2  | B       | 92.68% | ets homologous factor Putative Ortholog (highly conserved)      | 0.83 | A | 0.71 | A | 1    | A | Biochem. Biophys. Res. Commun. 246:176-181 (1998) |
| 17 | others | 85092.at | ets homologous factor                                 | 23 | 114753.at | AF035527 | NM_007914 | NP_031940 | 2  | B       | 92.68% | ets homologous factor Putative Ortholog (highly conserved)      | 1.1  | P | 1.1  | A | 1.3  | P | Biochem. Biophys. Res. Commun. 246:176-181 (1998) |
| 17 | others | 85092.at | ets homologous factor                                 | 22 | 102243.at | AW215423 | NM_007914 | NP_031940 | 2  | A       | 92.68% | ets homologous factor Putative Ortholog (highly conserved)      | 1.9  | A | 1.6  | A | 1.8  | A | Biochem. Biophys. Res. Commun. 246:176-181 (1998) |
| 17 | others | 85092.at | ets homologous factor                                 | 24 | 110963.at | AU527695 | NM_007914 | NP_031940 | 2  | B       | 92.68% | ets homologous factor Putative Ortholog (highly conserved)      | 0.83 | A | 0.71 | A | 1.1  | A | Biochem. Biophys. Res. Commun. 246:176-181 (1998) |
| 17 | others | 89320.at | MK167 (FHA domain) interacting nuclear phosphoprotein | 25 | 108958.at | AU851818 | -         | -         | -  | B       | 93.20% | RIKEN cDNA C130020.04 gene Putative Ortholog (highly conserved) | 0.83 | P | 1.1  | P | 1    | A | -   |
| 17 | others | 89320.at | MK167 (FHA domain) interacting nuclear phosphoprotein | 26 | 93342.at  | AU852865 | -         | -         | -  | A       | 93.20% | RIKEN cDNA C130020.04 gene Putative Ortholog (highly conserved) | 1.3  | P | 0.83 | P | 1.1  | P | -   |
| 17 | others | 77546.at | odd Oz/ten-m homolog 2 (Drosophila, mouse)            | 27 | 92389.at  | AB025411 | NM_011856 | NP_035966 | 11 | 18.0 cM | 89.61% | odd Oz/ten-m homolog 2 (Drosophila, mouse)                      | 1.5  | A | 0.56 | A | 0.46 | A | Unpublished (2001)                                |
| 17 | others | 77546.at | odd Oz/ten-m homolog 2 (Drosophila, mouse)            | 28 | 133154.at | AW125558 | -         | -         | -  | C       | 95.72% | ESTs Homolog  | 0.87 | A | 0.48 | A | 1.4  | A | -   |

| cat # | category        | human    | Probe ID             | #  | mouse     | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Map Location | mouse Map chip ID | homology | name  | MAS  | 1 st | 2nd | 3rd | reference |   |   |
|-------|-----------------|----------|----------------------|----|-----------|----------|---------------|---------------|--------------------|-------------------|----------|---|------|------|-----|-----|-----------|---|---|
| 20    | protein binding | 89338.at | Rab coupling protein | 29 | 135407.at | AW226597 | -             | -             | -                  | C                 | 93.75%   | RIKEN cDNA 483314C05 gene Putative Ortholog | 0.77 | A    | 2.5 | A   | 2.1       | A | - |

| cat # | category            | human    | Probe ID  | # | mouse | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Map Location | mouse Map chip ID | homology | name                | MASMS | 1 st | 2nd | 3rd | reference   |
|-------|---------------------|----------|---|---|-------|----------|---------------|---------------|--------------------|-------------------|----------|---------------------|-------|------|-----|-----|-------------|
| 24    | signal transduction | 87125.at | nuclear receptor co-repressor/HDAC3 complex subunit | - | -     | AF268108 | NM_030722     | NP_068657     | -                  | -                 | -        | IRAI protein (IRA1) | -     | -    | -   | -   | Unpublished |

| cat # | category    | human    | Probe ID  | #    | mouse | GenBank | mouse Ref Seq | mouse Ref Seq | mouse Map Location | mouse Map chip ID | homology | name | MASMS | 1 st | 2nd | 3rd | reference |
|-------|-------------|----------|---|------|-------|---------|---------------|---------------|--------------------|-------------------|----------|------|-------|------|-----|-----|-----------|
| 21    | transporter | 87880.at | solute carrier family 21 (organic anion transporter), member 12 | none | none  | -       | -             | -             | -                  | -                 | -        | -    | -     | -    | -   | -   | -         |
| 27    | transporter | 88617.at | solute carrier family 17 (anion/sugar transporter), member 3    | none | none  | -       | -             | -             | -                  | -                 | -        | -    | -     | -    | -   | -   | -         |

| cat #    | category | human | Probe ID | # | mouse | GenBank | mouse Ref Seq | mouse Ref Seq | mouse Map Location | mouse Map chip ID | homology | name | MASMS | 1 st | 2nd | 3rd | reference |
|----------|----------|-------|----------|---|-------|---------|---------------|---------------|--------------------|-------------------|----------|------|-------|------|-----|-----|-----------|
| 67357.at | ESTs     | -     | -        | - | -     | -       | -             | -             | -                  | -                 | -        | -    | -     | -    | -   | -   | -         |

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Table 64

| cat# | category         | human    | mouse  | GenBank | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology name | 1st P/A | 2nd P/A | 3rd P/A | reference                         |
|------|------------------|----------|--|---------|---------------|---------------|--------------------|---------|---------------|---------|---------|---------|-----------------------------------|
| 5    | Cytokine related | 1385.at  | transforming growth factor, beta-induced, 68kD | AV23182 | NM_009369     | NF_033595     | 13 380 cM          | A       | 88.6%         | 1.6     | A       | 0.4     | A DNA Cell Biol. 13:571-584(1994) |
| 5    | Cytokine related | 1385.at  | transforming growth factor, beta-induced, 68kD | L19932  | NM_009369     | NF_033595     | 13 380 cM          | A       | 88.6%         | 1.3     | P       | 0.9     | P DNA Cell Biol. 13:571-584(1994) |
| 5    | Cytokine related | 36031.at | tumor necrosis factor, alpha-induced protein 2 | L24118  | NM_009369     | NF_033595     | 13 380 cM          | A       | 85.1%         | 0.6     | A       | 0.8     | A DNA Cell Biol. 13:571-584(1994) |

| cat# | category          | human    | mouse  | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology name | 1st P/A | 2nd P/A | 3rd P/A | reference                            |
|------|-------------------|----------|--|----------|---------------|---------------|--------------------|---------|---------------|---------|---------|---------|--------------------------------------|
| 6    | Cytosolic protein | 35275.at | adaptor-related protein complex 1, gamma 1 subunit | AV291690 | -             | -             | -                  | A       | 95.6%         | 0.6     | A       | 0.7     | A -                                  |
| 6    | Cytosolic protein | 35275.at | adaptor-related protein complex 1, gamma 1 subunit | AW123834 | NM_009677     | NF_033807     | -                  | A       | 95.6%         | 1.1     | P       | 0.8     | P J. Cell Biol. 111:2319-2326 (1990) |
| 6    | Cytosolic protein | 35275.at | adaptor-related protein complex 1, gamma 1 subunit | X54424   | NM_009677     | NF_033807     | -                  | A       | 95.6%         | 1       | P       | 0.8     | A J. Cell Biol. 111:2319-2326 (1990) |
| 6    | Cytosolic protein | 40508.at | glutathione S-transferase A4                       | NOTE     | -             | -             | -                  | -       | -             | -       | -       | -       | -                                    |

| cat# | category | human    | mouse  | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology name  | 1st P/A | 2nd P/A | 3rd P/A | reference   |
|------|----------|----------|--|----------|---------------|---------------|--------------------|---------|--|---------|---------|---------|---|
| 7    | enzyme   | 32005.at | hepatic dihydrodipicolyl dehydrogenase gene exon 9 | -        | -             | -             | -                  | -       | -  | -       | -       | -       | -   |
| 7    | enzyme   | 34637.at | class I alcohol dehydrogenase, alpha subunit       | M22679   | NM_007409     | NF_031435     | 3 712 cM           | A       | alcohol dehydrogenase 1, complex Curated Ortholog                  | 0.6     | P       | 0.29    | P Proc. Natl. Acad. Sci. U.S.A. 82:2262-2265 (1985) |
| 7    | enzyme   | 34035.at | GJ12703.3 (Flavin-containing Monooxygenase 2)      | AW201476 | NM_018881     | NF_061369     | -                  | B       | flavin containing monooxygenase 2 Curated Ortholog                 | 0.7     | P       | 0.53    | P Genome Res. 10:1617-1630 (2000)                   |
| 7    | enzyme   | 35847.at | keratinocyte transglutaminase gene                 | A4681923 | NM_019984     | NF_084368     | -                  | C       | transglutaminase 1, K polypeptide Curated Ortholog                 | 1.2     | A       | 0.46    | A J. Biol. Chem. 274:34149-34154 (1999)             |
| 7    | enzyme   | 36247.at | class I alcohol dehydrogenase, gamma subunit       | M22679   | NM_007409     | NF_031435     | 3 712 cM           | A       | alcohol dehydrogenase 1, complex Putative Ortholog                 | 0.6     | P       | 0.29    | P Proc. Natl. Acad. Sci. U.S.A. 82:2262-2265 (1985) |
| 7    | enzyme   | 36454.at | carbonic anhydrase XII precursor                   | A314559  | -             | -             | -                  | A       | RIKEN cDNA 2310047E01 gene Putative Ortholog                       | 0.6     | A       | 0.59    | A -   |
| 7    | enzyme   | 36536.at | valalidin-1  | -        | -             | -             | -                  | -       | -  | -       | -       | -       | -   |
| 7    | enzyme   | 37115.at | glycogen phosphorylase                             | AY246818 | NM_133198     | NF_573461     | 12 300 cM          | B       | liver glycogen phosphorylase Curated Ortholog                      | 1.1     | A       | 1.6     | A Unpublished - (2001)                              |
| 7    | enzyme   | 37115.at | glycogen phosphorylase                             | A126150  | NM_133198     | NF_573461     | 12 300 cM          | B       | liver glycogen phosphorylase Curated Ortholog                      | 0.9     | P       | 1.2     | P Unpublished - (2001)                              |
| 7    | enzyme   | 37415.at | ATPase, Class V, type 10B                          | NOTE     | -             | -             | -                  | -       | -  | -       | -       | -       | -   |
| 7    | enzyme   | 37700.at | bleomycin hydrolase                                | AY112892 | -             | -             | -                  | A       | clone MGC27104 IMAGE:4952098, cDNA, complete cds Putative Ortholog | 1.1     | M       | 1.3     | A -   |
| 7    | enzyme   | 37700.at | bleomycin hydrolase                                | A853630  | -             | -             | -                  | A       | clone MGC37104 IMAGE:4952098, mRNA, complete cds Putative Ortholog | 0.8     | P       | 0.90    | P -   |

Table 65

|   |        |          |  |    |             |          |           |           |           |   |       |   |     |   |      |   |     |   |   |
|---|--------|----------|--|----|-------------|----------|-----------|-----------|-----------|---|-------|---|-----|---|------|---|-----|---|---|
| 7 | enzyme | 37700.at | blanovcin hydrolase                                      | 27 | 162179_r.at | A103224  | -         | -         | -         | A | 91.80 | stone MCC37104 IMAGE:492098, mRNA, complete cds Putative Ortholog         | 1.1 | A | 1.2  | A | 1.4 | A | -                                       |
| 7 | enzyme | 37956.at | aldehyde dehydrogenase 3B2                               | 28 | 160397.at   | A103931  | NM_016669 | NP_057878 | 7 55.0 cM | A |       | crystallin, mu Curated Ortholog   | 1.9 | A | 0.91 | A | 0.6 | A | Unpublished - 0                         |
| 7 | enzyme | 38085.at | crystallin, mu   | 29 | 166000.at   | A1248813 | NM_016669 | NP_057878 | 7 55.0 cM | C |       | crystallin, mu Curated Ortholog   | 1.3 | A | 0.59 | A | 0.4 | A | Unpublished - 0                         |
| 7 | enzyme | 38285.at | apodide hydrolase 1, microsomal (catabolic)              | 30 | 101597.at   | U89419   | NM_010145 | NP_034275 | 1 98.5 cM | A |       | apodide hydrolase 1, microsomal Curated Ortholog                          | 0.5 | P | 0.04 | A | 0.4 | P | Genome Res. 10:1617-1630 (2000)         |
| 7 | enzyme | 38790.at | ceruloplasmin (ferroxidase)                              | 31 | 92851.at    | U49430   | NM_007752 | NP_031778 | 8 55.0 cM | A |       | ceruloplasmin Curated Ortholog  | 1.6 | P | 3.1  | P | 2.2 | P | J. Clin. Invest. 98:207-215 (1996)      |
| 7 | enzyme | 39317.at | cytidine monophosphate-N-acetylneuraminic acid hydrolase | 32 | 93882.at    | D71826   | NM_007717 | NP_031743 | -         | A |       | cytidine monophosphate-N-acetylneuraminic acid hydrolase Curated Ortholog | 0.2 | A | 2.5  | A | 1.9 | A | J. Biol. Chem. 270:16458-16463 (1995)   |
| 7 | enzyme | 40082.at | long-chain fatty-acid-Coenzyme A ligase 2                | 33 | 94507.at    | U15977   | NM_001581 | NP_032007 | -         | A |       | fatty acid Coenzyme A ligase, long chain 2 Curated Ortholog               | 0.6 | P | 0.93 | P | 1   | P | Genome Res. 10:1617-1630 (2000)         |
| 7 | enzyme | 40522.at | glutamate-aminonia ligase (glutamine synthase)           | 34 | 117284.at   | A1848384 | NM_008131 | NP_032157 | -         | B | 89.74 | glutamine synthetase Curated Ortholog                                     | 0.8 | P | 0.63 | P | 1.9 | P | J. Mol. Biol. 208:45-56 (1988)          |
| 7 | enzyme | 40522.at | glutamate-aminonia ligase (glutamine synthase)           | 35 | 99498.at    | M28603   | NM_008131 | NP_032157 | -         | A | 89.74 | glutamine synthetase pseudogene 1 Homolog                                 | 0.4 | A | 0.77 | A | 1.3 | A | J. Mol. Biol. 208:45-56 (1988)          |
| 7 | enzyme | 40522.at | glutamate-aminonia ligase (glutamine synthase)           | 36 | 94632.at    | U09114   | NM_008131 | NP_032157 | -         | A | 89.74 | glutamine synthetase Homolog  | 0.9 | P | 0.77 | P | 1   | P | J. Mol. Biol. 208:45-56 (1988)          |
| 7 | enzyme | 40522.at | glutamate-aminonia ligase (glutamine synthase)           | 37 | 161825_r.at | A1231947 | NM_008131 | NP_032157 | -         | A | 89.74 | glutamine synthetase Homolog  | 1.2 | P | 0.91 | P | 1.2 | P | J. Mol. Biol. 208:45-56 (1988)          |
| 7 | enzyme | 40655.at | flavin containing monooxygenase 3                        | 38 | 101951.at   | D18215   | NM_010231 | NP_034361 | -         | A | 85.71 | flavin containing monooxygenase 1 Homolog                                 | 1.1 | P | 0.71 | P | 0.6 | P | Unpublished - 0                         |
| 7 | enzyme | 40665.at | flavin containing monooxygenase 3                        | 39 | 104421.at   | U87147   | NM_008030 | NP_032056 | -         | A |       | flavin containing monooxygenase 3 Curated Ortholog                        | 0.4 | P | 0.27 | P | 0.4 | P | Arch. Biochem. Biophys. 347:9-18 (1997) |
| 7 | enzyme | 770.at   | plasma glutathione peroxidase 3 precursor                | 40 | 163705_r.at | A1225591 | NM_008161 | NP_032187 | -         | C |       | glutathione peroxidase 3 Curated Ortholog                                 | 0.2 | A | 1.1  | A | 3.2 | A | J. Biol. Chem. 268:27066-27073 (1994)   |
| 7 | enzyme | 770.at   | plasma glutathione peroxidase 3 precursor                | 41 | 101676.at   | U13705   | NM_008161 | NP_032187 | -         | A |       | glutathione peroxidase 3 Curated Ortholog                                 | 0.9 | P | 0.81 | P | 0.8 | P | J. Biol. Chem. 268:27066-27073 (1994)   |

| cat# | category             | human    |                  | mouse |                | MASNS    |               | 3rd           |                         |
|------|----------------------|----------|------------------|-------|----------------|----------|---------------|---------------|-------------------------|
|      |                      | Probe ID | title            | #     | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Map chip Location |
| 8    | hypothetical protein | 32215.at | KIAA0878 protein | 42    | 113959.at      | AV208826 | -             | -             | B                       |
| 8    | hypothetical protein | 39400.at | KIAA1055 protein |       | none           |          |               |               |                         |
| 8    | hypothetical protein | 39597.at | KIAA0843 protein | 43    | 135485_r.at    | AV242700 | -             | -             | C                       |
| 8    | hypothetical protein | 39597.at | KIAA0843 protein | 44    | 162619.at      | A027478  | -             | -             | B                       |
| 8    | hypothetical protein | 39597.at | KIAA0843 protein | 45    | 112372.at      | AV202421 | -             | -             | B                       |

Table 66

|   |                      |          |                                |    |           |          |           |           |   |   |        |  |     |   |     |   |     |   |                      |
|---|----------------------|----------|--------------------------------|----|-----------|----------|-----------|-----------|---|---|--------|--|-----|---|-----|---|-----|---|----------------------|
| 8 | hypothetical protein | 40843_at | long-chain fatty-acyl elongase | 46 | 108490_at | A168327  | -         | -         | - | B | 99.19% | long chain fatty acyl elongase Putative Ortholog | 1   | P | 1.1 | P | 1   | P | -                    |
| 8 | hypothetical protein | 40843_at | long-chain fatty-acyl elongase | 47 | 94418_at  | A1839004 | NM_120450 | NP_669717 | - | A | 99.19% | long chain fatty acyl elongase Putative Ortholog | 0.4 | A | 1.7 | P | 1.7 | P | Unpublished ~ (2001) |

| cat# | category | human     |                                | mouse | mouse       |                | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chr ID | homology  | name | MASM5 |      |     |     |   | reference                                      |
|------|----------|-----------|--------------------------------|-------|-------------|----------------|-----------|---------------|---------------|--------------------|--------|---|------|-------|------|-----|-----|---|--|
|      |          | Probe ID  | title                          |       | #           | mouse Probe ID |           |               |               |                    |        |   |      | 1st   | 2nd  | 3rd | P/A |   |  |
| 10   | kinase   | 1108_s.at | EphA1                          | 48    | 169251_at   | AY298003       | NM_023580 | NP_076069     | -             | C                  | 92.55% | Eph receptor A1 Curated Ortholog  | 0.9  | M     | 0.91 | A   | 0.7 | A | Proc. Natl. Acad. Sci. U.S.A.93:145-150 (1996) |
| 10   | kinase   | 1108_s.at | EphA1                          | 49    | 100143_at   | Y07711         | NM_011777 | NP_035807     | -             | A                  | 92.55% | zyxin Putative Ortholog   | 3.3  | A     | 1.5  | A   | 0.8 | A | J. Biol. Chem. 271:31470-31478 (1996)          |
| 10   | kinase   | 33804_at  | protein tyrosine kinase 2 beta | 50    | 103451_at   | A1835159       | -         | -             | -             | A                  | -      | protein tyrosine kinase 2 beta Curated Ortholog   | 1.3  | P     | 1.2  | P   | 1.1 | P | -  |
| 10   | kinase   | 33804_at  | protein tyrosine kinase 2 beta | 51    | 169902_at   | AY214820       | -         | -             | -             | C                  | 93.42% | RKEN cDNA 2310057D15 gene Putative Ortholog   | 1.3  | A     | 1.6  | A   | 1.6 | A | -  |
| 10   | kinase   | 33804_at  | protein tyrosine kinase 2 beta | 52    | 167168_f.at | AY127592       | -         | -             | -             | C                  | 93.42% | RKEN cDNA 2310057D15 gene Putative Ortholog   | 1    | P     | 1.2  | P   | 0.9 | P | -  |
| 10   | kinase   | 33804_at  | protein tyrosine kinase 2 beta | 53    | 160097_at   | AW153329       | -         | -             | -             | A                  | 93.42% | RKEN cDNA 2310057D15 gene Putative Ortholog   | 1    | A     | 1.8  | A   | 1   | A | -  |
| 10   | kinase   | 35502_at  | PFTAIRE protein kinase 1       | 54    | 93422_at    | U62391         | NM_011074 | NP_035204     | 5 0.0 cM      | A                  | 94.21% | PFTAIRE protein kinase 1 Putative Ortholog (highly conserved)                               | 1.5  | P     | 0.71 | A   | 1.3 | P | J. Neurochem. 68:348-364 (1997)                |
| 10   | kinase   | 35502_at  | PFTAIRE protein kinase 1       | 55    | 93421_at    | AF030355       | NM_011074 | NP_035204     | 5 0.0 cM      | A                  | 94.21% | PFTAIRE protein kinase 1 Putative Ortholog (highly conserved)                               | 0.8  | P     | 0.71 | P   | 0.6 | P | J. Neurochem. 68:348-364 (1997)                |
| 10   | kinase   | 35502_at  | PFTAIRE protein kinase 1       | 56    | 188913_r.at | AY247594       | NM_011074 | NP_035204     | 5 0.0 cM      | C                  | 94.21% | PFTAIRE protein kinase 1 Putative Ortholog  | 0.8  | A     | 0.77 | A   | 0.7 | A | J. Neurochem. 68:348-364 (1997)                |
| 10   | kinase   | 35502_at  | PFTAIRE protein kinase 1       | 57    | 187725_f.at | AB947882       | NM_011074 | NP_035204     | 5 0.0 cM      | C                  | 94.21% | PFTAIRE protein kinase 1 Putative Ortholog  | 0.8  | P     | 0.83 | P   | 0.7 | P | J. Neurochem. 68:348-364 (1997)                |
| 10   | kinase   | 39120_at  | metallothionein 1L             | 58    | 113152_at   | A1850572       | NM_016866 | NP_068562     | -             | B                  | 93.22% | serine/threonine kinase 39, STE20/SPS1 homolog (yeast) Putative Ortholog (highly conserved) | 1    | P     | 0.32 | A   | 1   | A | Oncogene 19:4290-4297 (2000)                   |
| 10   | kinase   | 39120_at  | metallothionein 1L             | 59    | 160806_at   | AF099888       | NM_016866 | NP_068562     | -             | A                  | 93.22% | serine/threonine kinase 39, STE20/SPS1 homolog (yeast) Putative Ortholog (highly conserved) | 1.6  | P     | 0.56 | A   | 0.9 | P | Oncogene 19:4290-4297 (2000)                   |

| cat# | category       | human    | mouse  |    |                |          |               |                    |           |          |        |   | MASM5 |     |           |   |     |   |                        |
|------|----------------|----------|--|----|----------------|----------|---------------|--------------------|-----------|----------|--------|---|-------|-----|-----------|---|-----|---|------------------------|
|      |                | Probe ID | title  | #  | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Map Location | chip ID   | homology | name   | 1 st  | 2nd   | 3rd | reference |   |     |   |                        |
| 11   | matrix protein | 36881_at | electron-transfer-flavoprotein, beta polypeptide | 60 | 95947_at       | AW046273 | -             | -                  | -         | A        | 87.45% | RKEN cDNA 061000916 gene Putative Ortholog (highly conserved) | 0.9   | P   | 1.1       | P | -   |   |                        |
| 11   | matrix protein | 36881_at | electron-transfer-flavoprotein, beta polypeptide | 61 | 162144_at      | AY251508 | -             | -                  | -         | A        | 87.45% | RKEN cDNA 061000916 gene Putative Ortholog (highly conserved) | 1.6   | P   | 1         | P | 0.8 | M | -                      |
| 11   | matrix protein | 36881_at | electron-transfer-flavoprotein, beta polypeptide | 62 | 107800_at      | A038753  | -             | -                  | -         | B        |        | RKEN cDNA 482150416 gene Curated Ortholog                     | 0.8   | P   | 0.77      | P | 0.9 | P | -                      |
| 11   | matrix protein | 37600_at | extracellular matrix protein 1, isoform 1, 2     | 63 | 99054_at       | L32416   | NM_007899     | NP_031925          | 3 45.4 cM | A        | 86.72% | extracellular matrix protein 1 Homolog                        | 0.9   | A   | 1.3       | A | 1.5 | A | Gene 216253-261 (1999) |
| 11   | matrix protein | 37600_at | extracellular matrix protein 1, isoform 1, 2     | 64 | 170917_r.at    | AY052620 | NM_007899     | NP_031925          | 3 45.4 cM | C        | 86.72% | extracellular matrix protein 1 Homolog                        | 0.3   | A   | 1.4       | A | 2.3 | A | Gene 216253-261 (1999) |
| 11   | matrix protein | 37600_at | extracellular matrix protein 1, isoform 1, 2     | 65 | 160841_at      | A021573  | NM_133222     | NP_573495          | -         | A        | 93.10% | inducible 6-phosphotransferase-2-kinase Putative Ortholog     | 0.9   | A   | 0.83      | P | 0.6 | A | Unpublished ~ O        |

Table 67

|    |                |          |  |    |           |         |           |           |   |   |        |  |     |   |     |   |     |   |                 |
|----|----------------|----------|--|----|-----------|---------|-----------|-----------|---|---|--------|--|-----|---|-----|---|-----|---|-----------------|
| 11 | matrix protein | 37600.at | extracellular matrix protein 1, isoform 1, 2 | 66 | 103577.at | A126231 | NM_132232 | NP_573455 | - | A | 93.10% | inducible 6-phosphofructo-2-kinase Putative Ortholog | 0.6 | A | 0.5 | A | 1.3 | A | Unpublished - 0 |
|----|----------------|----------|--|----|-----------|---------|-----------|-----------|---|---|--------|--|-----|---|-----|---|-----|---|-----------------|

| cat | category         | human    |  |    | mouse          |          |               |                    |            |          |  |  |         |         | MASMS |     |     |                                     | 3rd reference                                     |
|-----|------------------|----------|--|----|----------------|----------|---------------|--------------------|------------|----------|--|--|---------|---------|-------|-----|-----|-------------------------------------|---|
|     |                  | Probe ID | title  | #  | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Map Location | chip ID    | homology | name   | 1st P/A  | 2nd P/A | 3rd P/A |       |     |     |                                     |   |
| 12  | membrane protein | 1042.at  | retinoic acid receptor responder (retazotene induced) 1      | 67 | 116451.at      | A4815200 | -             | -                  | B          | 87.74%   | expressed sequence A1042122 Putative Ortholog (highly conserved) | 0.8  | A       | 0.5     | A     | 0.8 | A   | -                                   |   |
| 12  | membrane protein | 33805.at | retinoic acid receptor responder (retazotene induced) 1      | 67 | 116451.at      | A4815200 | -             | -                  | B          | 87.74%   | expressed sequence A1042122 Putative Ortholog (highly conserved) | 0.8  | A       | 0.5     | A     | 0.8 | A   | -                                   |   |
| 12  | membrane protein | 33331.at | BENE protein   |    | none           |          |               |                    |            |          |  | -  | -       | -       | -     | -   | -   | -                                   |   |
| 12  | membrane protein | 33782.at | prostate stem cell antigen                                   | 68 | 160508.at      | AW209488 | -             | -                  | A          | 80.69%   | prostate stem cell antigen Putative Ortholog                     | 1  | A       | 0.71    | A     | 1.3 | A   | -                                   |   |
| 12  | membrane protein | 34820.at | Homo sapiens mRNA for putative GABA receptor epsilon subunit |    | -              | AH009304 | NM_017369     | NP_059045          | -          | -        | 84.80%   | gamma-aminobutyric acid (GABA-A) receptor, subunit                   | -       | -       | -     | -   | -   | Neurosci 2000 May 15;20(10):3589-95 |   |
| 12  | membrane protein | 34288.at | G protein-coupled receptor                                   | 69 | 92430.at       | AF000236 | NM_007722     | NP_031746          | 1 55.6 cM  | A        | 89.09%   | chemokine orphan receptor 1 Putative Ortholog (highly conserved)     | 0.7     | M       | 0.29  | P   | 0.6 | P                                   | Immunogenetics - (1997)                           |
| 12  | membrane protein | 34895.at | amphipodin (schwannoma-derived growth factor)                | 70 | 99815.at       | L41352   | NM_009704     | NP_033924          | 5 51.0 cM  | A        | 83.58%   | amphipodin Homolog   | 0.8     | M       | 0.58  | A   | 0.7 | A                                   | Biochem. Biophys. Res. Commun. 185:103-109 (1992) |
| 12  | membrane protein | 38223.at | vascular Rab-GAP/TBC-containing                              | 71 | 96339.at       | AW048363 | NM_053257     | NP_444487          | -          | A        | 95.63%   | ribosomal protein L31 Putative Ortholog                              | 0.5     | A       | 0.91  | A   | 0.6 | A                                   | Meth. Enzymol. 303:19-44 (1999)                   |
| 12  | membrane protein | 38223.at | vascular Rab-GAP/TBC-containing                              | 72 | 107252.at      | AV106158 | NM_053257     | NP_444487          | -          | C        | 95.63%   | ribosomal protein L31 Putative Ortholog                              | 0.5     | A       | 1.8   | A   | 1.3 | A                                   | Meth. Enzymol. 303:19-44 (1999)                   |
| 12  | membrane protein | 38223.at | vascular Rab-GAP/TBC-containing                              | 73 | 164621.at      | AV157335 | NM_053257     | NP_444487          | -          | B        | 95.63%   | ribosomal protein L31 Putative Ortholog                              | 0.8     | P       | 1.1   | P   | 1   | P                                   | Meth. Enzymol. 303:19-44 (1999)                   |
| 12  | membrane protein | 38379.at | phycocyanin (transmembrane) nmb                              | 74 | 108822.at      | A0815758 | NM_053110     | NP_444340          | 6 21.0 cM  | B        | 81.15%   | phycocyanin (transmembrane) nmb Putative Ortholog (highly conserved) | 1.1     | M       | 1.1   | M   | 1.7 | A                                   | J. Biol. Chem. 276:8125-8134 (2001)               |
| 12  | membrane protein | 38379.at | phycocyanin (transmembrane) nmb                              | 75 | 168824.at      | AV223501 | NM_053110     | NP_444340          | 6 21.0 cM  | C        | 81.15%   | phycocyanin (transmembrane) nmb Putative Ortholog (highly conserved) | 2.8     | A       | 0.63  | A   | 0.7 | A                                   | J. Biol. Chem. 276:8125-8134 (2001)               |
| 12  | membrane protein | 38750.at | Notch homolog 3  | 76 | 92956.at       | X74760   | NM_000716     | NP_032742          | 17 20.0 cM | A        | 84.81%   | Notch gene homolog 3 (Drosophila) Putative Ortholog                  | 0.7     | P       | 0.5   | P   | 0.6 | P                                   | Mech. Dev. 46:123-136 (1994)                      |
| 12  | membrane protein | 39310.at | bradykinin receptor B2                                       | 77 | 99387.at       | L26947   | NM_009747     | NP_033977          | 12 53.0 cM | A        | 85.67%   | bradykinin receptor, beta 2 Putative Ortholog (highly conserved)     | 0.6     | A       | 0.42  | A   | 0.6 | A                                   | Mol. Pharmacol. 44:346-355 (1993)                 |
| 12  | membrane protein | 40990.at | tetraspan 5  | 78 | 129282.at      | AW124518 | NM_019571     | NP_062517          | -          | C        | 93.28%   | transmembrane 4 superfamily member 9 Putative Ortholog               | 0.8     | A       | 1     | P   | 0.8 | A                                   | Genome Res. 10:1617-1630 (2000)                   |
| 12  | membrane protein | 40990.at | tetraspan 5  | 79 | 140325.at      | AW125637 | NM_019571     | NP_062517          | -          | C        | 93.28%   | transmembrane 4 superfamily member 9 Putative Ortholog               | 1.5     | A       | 1.2   | A   | 1.2 | A                                   | Genome Res. 10:1617-1630 (2000)                   |
| 12  | membrane protein | 40990.at | tetraspan 5  | 80 | 163391.at      | AW123971 | NM_019571     | NP_062517          | -          | B        | 93.28%   | transmembrane 4 superfamily member 9 Putative Ortholog               | 1       | P       | 0.83  | P   | 0.9 | P                                   | Genome Res. 10:1617-1630 (2000)                   |
| 12  | membrane protein | 40990.at | tetraspan 5  | 81 | 92426.at       | A077157  | NM_019571     | NP_062517          | -          | A        | 93.28%   | transmembrane 4 superfamily member 9 Putative Ortholog               | 0.6     | A       | 2.7   | A   | 0.4 | A                                   | Genome Res. 10:1617-1630 (2000)                   |

| cat | category   | human    |             |    | mouse          |          |               |                    |           |          |        |                               |         |         | MASMS |   |     |   | 3rd reference                   |
|-----|------------|----------|-------------|----|----------------|----------|---------------|--------------------|-----------|----------|--------|-------------------------------|---------|---------|-------|---|-----|---|---------------------------------|
|     |            | Probe ID | title       | #  | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Map Location | chip ID   | homology | name   | 1st P/A                       | 2nd P/A | 3rd P/A |       |   |     |   |                                 |
| 13  | metabolism | 32348.at | annexin A10 | 85 | 92494.at       | AJ238976 | NM_011922     | NP_036052          | 8 32.0 cM | A        | 87.74% | annexin A10 Putative Ortholog | 1.8     | A       | 1.3   | A | 0.9 | A | Meth. Enzymol. 303:19-44 (1999) |

Table 68

|    |            |          |   |         |           |           |           |           |   |        |     |      |                         |   |      |     |                                       |
|----|------------|----------|---|---------|-----------|-----------|-----------|-----------|---|--------|-----|------|-------------------------|---|------|-----|---------------------------------------|
| 13 | metabolism | 32464_at | defensin, beta 2  | -       | AJ011800  | NM_010030 | NP_034160 | 8 9.0 cM  | - | -      | -   | -    | defensin beta 2 (Defb2) | - | -    | -   | FEBS Lett 1999 Jan 8;442(1):112-6     |
| 13 | metabolism | 36496_at | inositolmyo-(1or 4)-monophosphatase 2   | 83      | 88420_at  | NM_053281 | NP_44448  | -         | A | 88.21% | 0.3 | 1.7  | A 0.8                   | A | 1.7  | 0.8 | Gene 271:285-291 (2001)               |
| 13 | metabolism | 37395_at | aldo-keto reductase family 1, member C3 (2-alpha hydroxysteroid dehydrogenase, type II) | A065678 | -         | -         | -         | -         | - | 86.00% | -   | -    | -                       | - | -    | -   | -                                     |
| 13 | metabolism | 37482_at | aldo-keto reductase family 1, member B10 (aldose reductase)                             | 84      | 161918_at | AV280611  | NP_033861 | 6 14.0 cM | A | -      | 0.7 | 0.59 | A 1.7                   | A | 0.59 | 1.7 | J. Biol. Chem. 265:19832-19936 (1993) |
| 13 | metabolism | 37482_at | aldo-keto reductase family 1, member B10 (aldose reductase)                             | 85      | 102826_at | J05863    | NP_033861 | 6 14.0 cM | A | -      | 1.4 | 0.42 | A 0.9                   | A | 0.42 | 0.9 | J. Biol. Chem. 265:19932-19936 (1993) |
| 13 | metabolism | 37482_at | aldo-keto reductase family 1, member B10 (aldose reductase)                             | 85      | 132885_at | A1426094  | -         | -         | C | 89.66% | 0.7 | 1.6  | A 0.4                   | A | 1.6  | 0.4 | -                                     |
| 13 | metabolism | 39785_at | fatty acid binding protein 5 (goniase-associated)                                       | 87      | 160544_at | AJ223066  | NP_034764 | -         | A | 82.70% | 1.3 | 0.56 | P 1.2                   | P | 0.56 | 1.2 | J. Biol. Chem. 268:17362-17369 (1999) |
| 13 | metabolism | 39785_at | fatty acid binding protein 5 (goniase-associated)                                       | 88      | 109764_at | A1840194  | NP_034764 | -         | B | 82.70% | 0.2 | 2.7  | P 0.8                   | A | 2.7  | 0.8 | J. Biol. Chem. 268:17362-17369 (1999) |

| cat | category | human    | Probe ID   | title | #         | mouse    | Probe ID  | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chp ID | homology | name  | 1st | 2nd | 3rd | reference   |
|-----|----------|----------|--|-------|-----------|----------|-----------|-----------|---------------|---------------|--------------------|--------|----------|-------|-----|-----|-----|---|
| 14  | MHC      | 38095_at | major histocompatibility complex, class II DP beta 1 | 89    | 100908_at | M21932   | NM_010379 | NP_034509 | 17 18.64 cM   | A             | 91.18%             | 1.1    | 1.6      | P 1.7 | P   | 1.6 | 1.7 | Cell 34:179-188 (1993)                            |
| 14  | MHC      | 38095_at | major histocompatibility complex, class II DP beta 1 | 90    | 116266_at | AW122580 | NM_010382 | NP_034512 | 17 18.66 cM   | B             | 91.23%             | 0.7    | 1.5      | A 1.7 | A   | 1.5 | 1.7 | Proc. Natl. Acad. Sci. U.S.A. 80:7621-7625 (1983) |
| 14  | MHC      | 38095_at | major histocompatibility complex, class II DP beta 1 | 89    | 100908_at | M21932   | NM_010379 | NP_034509 | 17 18.64 cM   | A             | 91.18%             | 1.1    | 1.6      | P 1.7 | P   | 1.6 | 1.7 | Cell 34:179-188 (1993)                            |
| 14  | MHC      | 38095_at | major histocompatibility complex, class II DP beta 1 | 90    | 116266_at | AW122580 | NM_010382 | NP_034512 | 17 18.66 cM   | B             | 91.23%             | 0.7    | 1.5      | A 1.7 | A   | 1.5 | 1.7 | Proc. Natl. Acad. Sci. U.S.A. 80:7621-7625 (1983) |

| cat | category    | human    | Probe ID                    | title | #           | mouse    | Probe ID  | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chp ID | homology | name  | 1st | 2nd  | 3rd | reference   |
|-----|-------------|----------|-----------------------------|-------|-------------|----------|-----------|-----------|---------------|---------------|--------------------|--------|----------|-------|-----|------|-----|---|
| 15  | MMP related | 1006_at  | matrix metalloproteinase 10 | 91    | 94724_at    | Y13165   | NM_019471 | NP_042344 | -             | A             | 84.75%             | 1.4    | 1.2      | A 1.2 | A   | 1.2  | 1.2 | J. Biol. Chem. 269 (14), 10363-10369 (1994)       |
| 15  | MMP related | 31659_at | matrix metalloproteinase 9  | 92    | 162369_f.at | AV239570 | NM_013599 | NP_038627 | 2 56.0 cM     | A             | 83.10%             | 2      | 1.8      | A 1.2 | A   | 1.8  | 1.2 | Biochem. Biophys. Res. Commun. 190:732-740 (1993) |
| 15  | MMP related | 31659_at | matrix metalloproteinase 9  | 93    | 99557_at    | X72705   | NM_013599 | NP_038627 | 2 56.0 cM     | A             | 83.10%             | 1      | 1.5      | A 0.4 | A   | 1.5  | 0.4 | Biochem. Biophys. Res. Commun. 190:732-740 (1993) |
| 15  | MMP related | 31659_at | matrix metalloproteinase 9  | 94    | 168521_r.at | AV231660 | NM_013599 | NP_038627 | 2 56.0 cM     | C             | 83.10%             | 1.9    | 0.53     | A 1   | A   | 0.53 | 1   | Biochem. Biophys. Res. Commun. 190:732-740 (1993) |

| cat | category    | human    | Probe ID                    | title | #           | mouse    | Probe ID  | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chp ID | homology | name  | 1st | 2nd  | 3rd | reference   |
|-----|-------------|----------|-----------------------------|-------|-------------|----------|-----------|-----------|---------------|---------------|--------------------|--------|----------|-------|-----|------|-----|---|
| 15  | MMP related | 1006_at  | matrix metalloproteinase 10 | 91    | 94724_at    | Y13165   | NM_019471 | NP_042344 | -             | A             | 84.75%             | 1.4    | 1.2      | A 1.2 | A   | 1.2  | 1.2 | J. Biol. Chem. 269 (14), 10363-10369 (1994)       |
| 15  | MMP related | 31659_at | matrix metalloproteinase 9  | 92    | 162369_f.at | AV239570 | NM_013599 | NP_038627 | 2 56.0 cM     | A             | 83.10%             | 2      | 1.8      | A 1.2 | A   | 1.8  | 1.2 | Biochem. Biophys. Res. Commun. 190:732-740 (1993) |
| 15  | MMP related | 31659_at | matrix metalloproteinase 9  | 93    | 99557_at    | X72705   | NM_013599 | NP_038627 | 2 56.0 cM     | A             | 83.10%             | 1      | 1.5      | A 0.4 | A   | 1.5  | 0.4 | Biochem. Biophys. Res. Commun. 190:732-740 (1993) |
| 15  | MMP related | 31659_at | matrix metalloproteinase 9  | 94    | 168521_r.at | AV231660 | NM_013599 | NP_038627 | 2 56.0 cM     | C             | 83.10%             | 1.9    | 0.53     | A 1   | A   | 0.53 | 1   | Biochem. Biophys. Res. Commun. 190:732-740 (1993) |



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Table 70

|    |        |          |  |     |           |          |           |           |   |         |   |  |     |      |      |     |     |   |                                 |
|----|--------|----------|--|-----|-----------|----------|-----------|-----------|---|---------|---|--|-----|------|------|-----|-----|---|---------------------------------|
| 17 | others | 39803.at | clone 24685 mRNA (neurocalin delta)                | 112 | 140899.at | AW124014 | -         | -         | C | 100.00% | ESTs Putative Ortholog (highly conserved)                       | 0.9  | A   | 0.77 | A    | 1.3 | A   | - |                                 |
| 17 | others | 39827.at | RTP801   | 113 | 103460.at | AB493939 | -         | -         | A | 92.59%  | RIKEN cDNA 3830413E08 gene Putative Ortholog (highly conserved) | 1  | A   | 1.1  | A    | 1   | A   | - |                                 |
| 17 | others | 41841.at | GPI-anchored metastasis-associated protein homolog | 114 | 163822.at | AA073823 | NM_133743 | NP_598504 | - | B       | 83.05%  | GPI-anchored metastasis-associated protein homolog Putative Ortholog | 1.5 | P    | 0.67 | P   | 1   | A | Genome Res. 10:1617-1630 (2000) |
| 17 | others | 41841.at | GPI-anchored metastasis-associated protein homolog | 115 | 169732.at | AV075775 | NM_133743 | NP_598504 | - | C       | 85.05%  | GPI-anchored metastasis-associated protein homolog Putative Ortholog | 0.9 | A    | 0.33 | A   | 0.7 | A | Genome Res. 10:1617-1630 (2000) |

| human    | mouse     | MASMS         |               |                    |         |          |  |         |         |         |           |                                  |
|----------|-----------|---------------|---------------|--------------------|---------|----------|--|---------|---------|---------|-----------|----------------------------------|
| Probe ID | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology | name   | 1st P/A | 2nd P/A | 3rd P/A | reference |                                  |
| 18 P450  | 1371.s.at | M21856        | -             | AAAA04025          | -       | A        | 88.47% cytochrome P450, 2b10, phenobarbital-inducible, type B Putative Ortholog (highly conserved) | 0.8     | P       | 0.67    | P         | 0.8 P (1998)                     |
| 18 P450  | 1371.s.at | AF047529      | NM_007814     | NP_031840          | 7.73 Cm | A        | 84.80% cytochrome P450, 2b19 Homolog   | 1.8     | A       | 0.42    | A         | 0.6 A Genomics 53:417-419 (1998) |
| 18 P450  | 37124.at  |               |               |                    |         |          |  | -       | -       | -       | -         |                                  |
| 18 P450  | 37125.at  |               |               |                    |         |          |  | -       | -       | -       | -         |                                  |

| human          | mouse   | MASMS         |               |                    |           |            |      |  |         |         |           |   |  |
|----------------|---------|---------------|---------------|--------------------|-----------|------------|------|--|---------|---------|-----------|---|--|
| Probe ID       | GenBank | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID   | homology   | name | 1st P/A  | 2nd P/A | 3rd P/A | reference |   |  |
| 19 phosphatase | 1005.at | 168811.at     | AV216941      | NM_013842          | NP_038670 | 17 13.0 cM | C    | protein tyrosine phosphatase, non-receptor type 16 Curated Ortholog                            | 1.2     | A       | 0.7       | A | Oncogene 7:187-190 (1992)              |
| 19 phosphatase | 1005.at | 104598.at     | X61940        | NM_013842          | NP_038670 | 17 13.0 cM | A    | 88.18% protein tyrosine phosphatase, non-receptor type 16 Putative Ortholog (highly conserved) | 0.7     | P       | 0.63      | P | 0.4 P Oncogene 7:187-190 (1992)        |
| 19 phosphatase | 1364.at | 92380.at      | AJ133130      | NM_011219          | NP_035349 | -          | A    | protein tyrosine phosphatase, receptor type, Z Curated Ortholog                                | 1.3     | A       | 0.77      | A | 1.4 A J. Neurosci. 19:3888-3899 (1999) |
| 19 phosphatase | 1364.at | 169828.at     | AV151278      | NM_011219          | NP_035349 | -          | C    | protein tyrosine phosphatase, receptor type, Z Curated Ortholog                                | 1       | A       | 1.9       | A | 0.6 A J. Neurosci. 19:3888-3899 (1999) |
| 19 phosphatase | 1364.at | 134748.at     | AB662731      | NM_011219          | NP_035349 | -          | C    | protein tyrosine phosphatase, receptor type, Z Curated Ortholog                                | 0.9     | A       | 0.63      | A | 0.6 A J. Neurosci. 19:3888-3899 (1999) |
| 19 phosphatase | 1364.at | 165782.at     | AW120652      | -                  | -         | -          | C    | Mus musculus, clone IMAGE3980815, mRNA, partial cds Putative Ortholog (highly conserved)       | 0.6     | A       | 0.67      | A | 1.6 P -                                |

| human              | mouse   | MASMS         |               |                    |           |            |      |   |         |         |           |   |              |   |
|--------------------|---------|---------------|---------------|--------------------|-----------|------------|------|---|---------|---------|-----------|---|--------------|---|
| Probe ID           | GenBank | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID   | homology   | name | 1st P/A   | 2nd P/A | 3rd P/A | reference |   |              |   |
| 20 binding protein | 1586.at | 95083.at      | X81581        | NM_008343          | NP_032369 | 11 1.35 cM | A    | 83.12% insulin-like growth factor binding protein 3 Putative Ortholog | 0.4     | A       | 0.77      | A | 0.2 A (1994) | Mol. Cell. Endocrinol. 104:57-66 (1994) |
| 20 binding protein | 1586.at | 95082.at      | AB42277       | NM_008343          | NP_032369 | 11 1.35 cM | A    | 83.12% insulin-like growth factor binding protein 3 Putative Ortholog | 1       | P       | 0.18      | M | 0.2 M (1994) | Mol. Cell. Endocrinol. 104:57-66 (1994) |

Table 71

|                         |          |  |     |           |         |           |           |    |         |        |   |     |   |      |   |     |   |   |
|-------------------------|----------|--|-----|-----------|---------|-----------|-----------|----|---------|--------|---|-----|---|------|---|-----|---|---|
| protein binding protein | 37319.at | insulin-like growth factor binding protein 3 | 124 | 95083.at  | X61581  | NM_008343 | NP_032369 | 11 | 1.35 cM | 83.12% | insulin-like growth factor binding protein 3 Putative Ortholog                    | 0.4 | A | 0.77 | A | 0.2 | A | Mol. Cell. Endocrinol. 104:57-66 (1994) |
| protein binding protein | 37319.at | insulin-like growth factor binding protein 3 | 125 | 95082.at  | A082277 | NM_008343 | NP_032369 | 11 | 1.35 cM | 83.12% | insulin-like growth factor binding protein 3 Putative Ortholog                    | 1   | P | 0.18 | M | 0.2 | M | Mol. Cell. Endocrinol. 104:57-66 (1994) |
| protein binding protein | 1736.at  | insulin-like growth factor binding protein 6 | 126 | 103904.at | X61584  | NM_008344 | NP_032370 | -  | A       | 83.27% | insulin-like growth factor binding protein 6 Putative Ortholog (highly conserved) | 0.7 | P | 0.63 | P | 0.7 | P | Mol. Cell. Endocrinol. 104:57-66 (1994) |
| protein binding protein | 32149.at | microsomal protein, beta                     | 127 | 100715.at | U09840  | NM_020597 | NP_065422 | -  | A       |        | beta-microsomal protein Curated Ortholog  | 2.1 | P | 1.1  | A | 0.9 | A | DNA Cell Biol. 18:11-28 (1999)          |

| cat# | category             | human    | Probe ID     | title | # | mouse | Probe ID | GenBank | mouse Ref Seq | mouse Ref Seq | mouse Map chip Location | homology ID | homology name | 1st | 2nd | 3rd | 1st | 2nd | 3rd | reference |
|------|----------------------|----------|--------------|-------|---|-------|----------|---------|---------------|---------------|-------------------------|-------------|---------------|-----|-----|-----|-----|-----|-----|-----------|
| 21   | proteinase inhibitor | 40717.at | cathepsin L2 | none  |   |       |          |         |               |               |                         |             |               |     |     |     |     |     |     |           |

| cat# | category             | human    | Probe ID  | title | #           | mouse    | Probe ID  | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Map chip Location | homology ID   | homology name | 1st | 2nd  | 3rd | 1st | 2nd | 3rd | reference                            |
|------|----------------------|----------|---|-------|-------------|----------|-----------|-----------|---------------|---------------|-------------------------|---|---------------|-----|------|-----|-----|-----|-----|--------------------------------------|
| 22   | proteinase inhibitor | 33305.at | serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 1                                      | 128   | 103811.at   | AK018226 | XM_110043 | XP_110043 | -             | -             | 75.00%                  | serine (or cysteine) proteinase inhibitor, clade B, member 1b   | -             | -   | -    | -   | -   | -   | -   |                                      |
| 22   | proteinase inhibitor | 33825.at | serine (or cysteine) proteinase inhibitor, clade A (alpha-1 antitrypsin, antitrypsin), member 3               | 129   | 94147.at    | M33960   | NM_008871 | NP_032897 | -             | -             | 91.34%                  | serine (or cysteine) proteinase inhibitor, clade E (neirin, plasminogen activator inhibitor type 1), member 1 | 0.9           | P   | 1.4  | P   | 1   | P   | 1   | J. Cell Biol. 123:485-496 (1993)     |
| 22   | proteinase inhibitor | 38125.at | serine (or cysteine) proteinase inhibitor, clade E (neirin, plasminogen activator inhibitor type 1), member 1 | 129   | 94147.at    | M33960   | NM_008871 | NP_032897 | -             | -             | 91.34%                  | serine (or cysteine) proteinase inhibitor, clade E (neirin, plasminogen activator inhibitor type 1), member 1 | 0.9           | P   | 1.4  | P   | 1   | P   | 1   | Mol. Cell. Biol. 10:1265-1269 (1990) |
| 22   | proteinase inhibitor | 862.at   | serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 5                                      | 130   | 170241.f.at | AV077498 | NM_009257 | NP_033283 | -             | -             | C                       | serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 5 Curated Ortholog                     | 0.5           | A   | 0.39 | A   | 0.7 | A   | 0   | Unpublished - 0                      |
| 22   | proteinase inhibitor | 862.at   | serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 5                                      | 131   | 100034.at   | U64705   | NM_009257 | NP_033283 | -             | -             | A                       | serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 5 Putative Ortholog                    | 0.5           | A   | 0.81 | A   | 1   | A   | 1   | Unpublished - 0                      |
| 22   | proteinase inhibitor | 862.at   | serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 5                                      | 132   | 165130.at   | A046751  | NM_009257 | NP_033283 | -             | -             | C                       | serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 5 Putative Ortholog                    | 1.6           | A   | 0.77 | A   | 1.2 | A   | 1.2 | Unpublished - 0                      |

| cat# | category | human    | Probe ID                        | title | #         | mouse  | Probe ID  | GenBank   | mouse Ref Seq | mouse Ref Seq | mouse Map chip Location | homology ID | homology name  | 1st | 2nd | 3rd | 1st | 2nd | 3rd | reference |                              |                                |
|------|----------|----------|---------------------------------|-------|-----------|--------|-----------|-----------|---------------|---------------|-------------------------|-------------|--|-----|-----|-----|-----|-----|-----|-----------|------------------------------|--------------------------------|
| 23   | S100     | 41096.at | S100 calcium-binding protein A8 | 133   | 101634.at | M33212 | NM_008722 | NP_032748 | -             | -             | A                       | 94.83%      | nucleophosmin 1 Putative Ortholog (highly conserved)             | 1.1 | P   | 1   | P   | 1   | P   | 1         | Chromosome 96:417-426 (1988) |                                |
| 23   | S100     | 41096.at | S100 calcium-binding protein A8 | 134   | 103448.at | M63218 | NM_013650 | NP_038678 | 3             | 43.6 cM       | A                       | 94.83%      | S100 calcium binding protein A8 (calgranulin A) Curated Ortholog | 1.5 | P   | 2   | P   | 2   | P   | 0.3       | P                            | Blood 79 (8), 1907-1915 (1992) |

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| cell | category             | human    | probe ID   | title | #         | mouse          |           |               |                    | MASMS    |          |   |         | 3rd reference |         |         |   |   |   |
|------|----------------------|----------|--|-------|-----------|----------------|-----------|---------------|--------------------|----------|----------|---|---------|---------------|---------|---------|---|---|---|
|      |                      |          |  |       |           | mouse Probe ID | GenBank   | mouse Ref Seq | mouse Ref Location | mouse ID | homology | name  | 1st P/A |               | 2nd P/A | 3rd P/A |   |   |   |
| 26   | transcription factor | 1452.at  | LM domain only 4   | 159   | 98122.at  | AF074600       | NM_010723 | NP_034853     | 731 cM             | A        | 95.7%    | LM only 4 Putative Ortholog (highly conserved)                          | 1.2     | P             | 1.3     | P       | Proc. Natl. Acad. Sci. U.S.A. 95:1257-1262 (1998) |   |   |
| 26   | transcription factor | 33439.at | ion factor 6 (expresses interleukin 2 expression)                      | 160   | 99082.at  | D76432         | NM_011546 | NP_035676     | 18.0 cM            | A        | 95.7%    | zinc finger homeobox 1a Putative Ortholog                               | 1       | P             | 0.77    | P       | Gene 169:289-290 (1998)                           |   |   |
| 26   | transcription factor | 34216.at | Kruppel-like factor 7 (ubiquitous)                                     | 161   | 104645.at | A0557112       | NM_033563 | NP_291041     | 1C1-C3             | A        | 94.8%    | Kruppel-like factor 7 (ubiquitous) Putative Ortholog (highly conserved) | 1       | P             | 0.77    | P       | 0.6   | P | Unpublished -- O                                  |
| 26   | transcription factor | 34216.at | Kruppel-like factor 7 (ubiquitous)                                     | 162   | 112895.at | A045576        | NM_033563 | NP_291041     | 1C1-C3             | B        | 94.8%    | Kruppel-like factor 7 (ubiquitous) Putative Ortholog (highly conserved) | 1.3     | P             | 1       | P       | 1.2   | P | Unpublished -- O                                  |
| 26   | transcription factor | 34216.at | Kruppel-like factor 7 (ubiquitous)                                     | 163   | 107020.at | A049268        | NM_033563 | NP_291041     | 1C1-C3             | B        | 94.8%    | Kruppel-like factor 7 (ubiquitous) Putative Ortholog (highly conserved) | 0.7     | P             | 1.1     | A       | 0.9   | A | Unpublished -- O                                  |
| 26   | transcription factor | 34216.at | Kruppel-like factor 7 (ubiquitous)                                     | 164   | 114906.at | A046497        | NM_033563 | NP_291041     | 1C1-C3             | B        | 94.8%    | Kruppel-like factor 7 (ubiquitous) Putative Ortholog (highly conserved) | 0.7     | P             | 1.1     | P       | 0.7   | P | Unpublished -- O                                  |
| 26   | transcription factor | 35425.at | BarH-like homeobox 2   | 165   | 100738.at | L77900         | NM_013600 | NP_039828     | -                  | A        | 93.7%    | BarH-like homeobox 2 Putative Ortholog                                  | 0.4     | A             | 0.59    | A       | 0.5   | A | Proc. Natl. Acad. Sci. U.S.A. 94:2632-2637 (1997) |
| 26   | transcription factor | 36519.at | inhibitor of DNA binding 1, dominant negative helix-loop-helix protein | 166   | 100030.at | M31895         | -         | AAA37879      | -                  | A        | -        | inhibitor of DNA binding 1 Curated Ortholog                             | 0.9     | P             | 0.71    | P       | 0.7   | P | Cell 81:49-59 (1990)                              |

Table 74

|    |                      |          |  |     |             |          |           |           |            |   |        |  |     |   |      |   |     |   |   |
|----|----------------------|----------|--|-----|-------------|----------|-----------|-----------|------------|---|--------|--|-----|---|------|---|-----|---|---|
| 26 | transcription factor | 41246.at | DKFZF56011924 protein                                | 167 | 97487.at    | X70296   | NM_009255 | NP_033281 | 148.5 Cm   | A | 91.61% | serine (or cysteine) proteinase inhibitor, class E (nexin, plasminogen activator inhibitor type 1), member 2 Putative Ortholog | 1.2 | A | 1.1  | A | 1.3 | A | EMBO J. 12:1871-1878 (1993)                 |
| 27 | transporter          | 1922.at  | ATP-binding cassette, sub-family C, member 5         | 168 | 103800.at   | AB019003 | NM_013790 | NP_038818 | 16 14.0 cM | A | 90.79% | ATP-binding cassette, sub-family C, member 5a  | 0.9 | A | 1    | A | 1   | P | Biochim. Biophys. Acta, 1461:347-357 (1999) |
| 27 | transporter          | 1922.at  | ATP-binding cassette, sub-family C, member 5         | 169 | 165744.at   | AW124768 | NM_013790 | NP_038818 | 16 14.0 cM | C | 98.08% | ATP-binding cassette, sub-family C (CFTR/MRP), member 5a Curated Ortholog  | 0.8 | A | 1.5  | A | 1.2 | A | Biochim. Biophys. Acta, 1461:347-357 (1999) |
| 27 | transporter          | 1922.at  | ATP-binding cassette, sub-family C, member 5         | 170 | 169447.at   | AV168159 | NM_013790 | NP_038818 | 16 14.0 cM | C |        | ATP-binding cassette, sub-family C (CFTR/MRP), member 5a Curated Ortholog  | 3.1 | A | 3    | A | 0.4 | A | Biochim. Biophys. Acta, 1461:347-357 (1999) |
| 27 | transporter          | 32531.at | connexin 43  | 171 | 100064.f.at | M63801   | NM_010288 | NP_034418 | 10 28.0 cM | A |        | gap junction membrane channel protein alpha 1 Curated Ortholog   | 1.1 | P | 1.4  | P | 1.1 | P | J. Biol. Chem. 266:7971-7974 (1991)         |
| 27 | transporter          | 32531.at | connexin 43  | 172 | 100065.f.at | M63801   | NM_010288 | NP_034418 | 10 28.0 cM | A |        | gap junction membrane channel protein alpha 1 Curated Ortholog   | 1.2 | P | 0.91 | P | 0.9 | P | J. Biol. Chem. 266:7971-7974 (1991)         |
| 27 | transporter          | 32909.at | Aquaporin-5  | 173 | 113816.at   | A182792  | NM_009701 | NP_033931 | 15 58.6 cM | B |        | aquaporin 5 Curated Ortholog   | 0.8 | P | 0.83 | P | 0.6 | P | Mamm. Genome 10:498-505 (1999)              |
| 27 | transporter          | 37591.at | uncoupling protein 2                                 | 174 | 92792.at    | U09135   | NM_011671 | NP_035601 | 7 50.0 cM  | A | 91.28% | uncoupling protein 2, mitochondrial Homolog  | 1.5 | A | 1.3  | A | 0.8 | A | Diabetes 46:900-906(1997)                   |
| 27 | transporter          | 38682.at | sodium channel, nonvoltage-gated 1, beta             | 175 | 110692.at   | A806932  | NM_011325 | NP_035455 | 7 56.0 cM  | B | 87.58% | sodium channel, nonvoltage-gated 1 beta Putative Ortholog (highly conserved)   | 0.4 | P | 0.36 | A | 0.2 | A | Am. J. Physiol. 277- (1999)                 |
| 27 | transporter          | 40297.at | six transmembrane epithelial antigen of the prostate |     | -           | AK010437 | NM_027398 | NP_081675 | 5 3.0 cM   | - | 81.00% | six transmembrane epithelial antigen of the prostate   | -   | - | -    | - | -   | - | Nature 409 (6821), 685-690 (2001)           |
| 27 | transporter          | 40339.at | gamma-aminobutyric acid (GABA) A receptor            | 176 | 163918.at   | AV216203 | -         | -         | -          | B | 88.69% | Mus musculus, clone MGC28005 IMAGE:3802400, mRNA, complete cds Putative Ortholog (highly conserved)                            | 1.2 | P | 1.5  | P | 1   | P | -   |
| 27 | transporter          | 40339.at | gamma-aminobutyric acid (GABA) A receptor            | 177 | 169112.at   | AV216203 | -         | -         | -          | C | 88.69% | Mus musculus, clone MGC28005 IMAGE:3802400, mRNA, complete cds Putative Ortholog (highly conserved)                            | 1.4 | A | 1.4  | A | 1   | A | -   |

|      |          |       |            |                     |     |           |          |         |               |               |                    |         |          |  |         |         |         |         |         |           |   |
|------|----------|-------|------------|---------------------|-----|-----------|----------|---------|---------------|---------------|--------------------|---------|----------|--|---------|---------|---------|---------|---------|-----------|---|
| cat# | category | human | Probe ID   | title               | #   | mouse     | Probe ID | GenBank | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology | name   | 1st P/A | 1st P/A | 2nd P/A | 2nd P/A | 3rd P/A | reference |   |
|      |          |       | 33546.at   | clone IMAGE-2448791 |     | none      |          |         | -             | -             | -                  |         |          |  |         |         |         |         |         |           |   |
|      |          |       | 38262.at   | clone 23620 mRNA    | 178 | 140487.at | AW124202 |         | -             | -             | -                  | C       | 83.44%   | EST's Putative Ortholog (highly conserved)   | 0.8     | P       | 0.77    | P       | 1.8     | P         | - |
|      |          |       | 40191.s.at | clone IMAGE 21721   | 179 | 131152.at | AW142707 |         | -             | -             | -                  | C       | 89.92%   | Mus musculus, Similar to KIAA0582 protein, clone MGC3990 IMAGE:3154984, mRNA, complete cds Putative Ortholog | 0.8     | A       | 0.71    | A       | 0.8     | A         | - |

Table 75

| cat# | category      | human    |                           |         | mouse         |               |                    | MASMS   |  |       |     |       |                                      |
|------|---------------|----------|---------------------------|---------|---------------|---------------|--------------------|---------|--|-------|-----|-------|--------------------------------------|
|      |               | Probe ID | title                     | GenBank | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology name                            | 1st   | 2nd | 3rd   | reference                            |
| 2    | cell adhesion | 43119_at | desmocollin 3 isoform a,b | Y11169  | NM_007862     | NP_031908     | 18 70 cM           | A       | 87.58%<br>desmocollin 3 Curated Ortholog | 0.345 | A   | 0.769 | A 1.2 A Dev. Dyn. 210:315-327 (1997) |
| 2    | cell adhesion | 78516_at | desmocollin 3 isoform a,b | Y11169  | NM_007862     | NP_031908     | 18 70 cM           | A       | 87.58%<br>desmocollin 3 Curated Ortholog | 0.345 | A   | 0.769 | A 1.2 A Dev. Dyn. 210:315-327 (1997) |

| cat# | category         | human    |                                |          | mouse         |               |                    | MASMS   |                |     |     |     |           |
|------|------------------|----------|--------------------------------|----------|---------------|---------------|--------------------|---------|----------------|-----|-----|-----|-----------|
|      |                  | Probe ID | title                          | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology name  | 1st | 2nd | 3rd | reference |
| 5    | Cytokine related | 42868_at | interleukin 20 receptor, alpha | BB850070 | -             | -             | -                  | -       | 87.60%<br>ESTs | -   | -   | -   | -         |

| cat# | category | human    |  |          | mouse         |               |                    | MASMS   |  |       |     |       |   |
|------|----------|----------|--|----------|---------------|---------------|--------------------|---------|--|-------|-----|-------|---|
|      |          | Probe ID | title                                    | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology name  | 1st   | 2nd | 3rd   | reference                                   |
| 7    | enzyme   | 56373_at | UDP-Galactose 4-epimerase, polypeptide 5 | AB32199  | -             | -             | -                  | B       | 95.11%<br>RKEN cDNA B43004F70 gene Homolog   | 0.556 | P   | 0.909 | A 0.909 A -                                 |
| 7    | enzyme   | 56373_at | UDP-Galactose 4-epimerase, polypeptide 5 | AW122637 | NM_019935     | NP_042809     | -                  | B       | 95.11%<br>UDP-Galactose 4-epimerase, polypeptide 5<br>Putative Ortholog (highly conserved) | 0.5   | A   | 0.4   | A 0.769 A Published Only in DataBase (2000) |
| 7    | enzyme   | 58023_at | glutathione S-transferase A3             | X85021   | NM_010356     | NP_034486     | 9 48.0 cM          | A       | 88.97%<br>glutathione S-transferase, alpha 3<br>Putative Ortholog                          | 1     | P   | 0.525 | P 0.536 P Cancer Res. 52:314-318 (1992)     |
| 7    | enzyme   | 58023_at | glutathione S-transferase A3             | AV168894 | NM_010356     | NP_034486     | 9 48.0 cM          | B       | 88.97%<br>glutathione S-transferase, alpha 3<br>Putative Ortholog                          | 2     | A   | 1.5   | A 1.3 A Cancer Res. 52:314-318 (1992)       |
| 7    | enzyme   | 45805_at | long-chain fatty-acyl elongase           | AW12253  | NM_130450     | NP_595717     | -                  | A       | 98.19%<br>long chain fatty-acyl elongase<br>Putative Ortholog                              | 1     | P   | 1.1   | P 1 A Unpublished - (2001)                  |
| 7    | enzyme   | 45805_at | long-chain fatty-acyl elongase           | AB39004  | NM_130450     | NP_595717     | -                  | A       | 98.19%<br>long chain fatty-acyl elongase<br>Putative Ortholog                              | 0.4   | A   | 1.7   | P 1.7 P Unpublished - (2001)                |

| cat# | category             | human      |   |          | mouse         |               |                    | MASMS   |   |       |     |       |   |
|------|----------------------|------------|---|----------|---------------|---------------|--------------------|---------|---|-------|-----|-------|---|
|      |                      | Probe ID   | title   | GenBank  | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology name   | 1st   | 2nd | 3rd   | reference                                 |
| 8    | hypothetical protein | 43546_at   | hypothetical protein FLJ12541 similar to Siz6 | AF092476 | NM_009294     | NP_033317     | -                  | A       | 81.75%<br>stimulated by retinoic acid gene8<br>Putative Ortholog (highly conserved) | 0.455 | A   | 0.5   | A 1.5 A Dev. Biol. 170:420-433 (1995)     |
| 8    | hypothetical protein | 43553_at   | HIF-1 responsive RTP801                       | AB48939  | NM_039043     | NP_083359     | -                  | A       | 92.55%<br>RKEN cDNA B630413E09 gene<br>Putative Ortholog                            | 0.333 | A   | 1     | A 1.1 A -                                 |
| 8    | hypothetical protein | 44682_at   | hypothetical protein DKFZ643M1210             | -        | -             | -             | -                  | -       | -   | -     | -   | -     | -   |
| 8    | hypothetical protein | 44705_at   | hypothetical protein HSPC195                  | AV121218 | NM_133887     | NP_598448     | -                  | C       | 98.43%<br>RKEN cDNA 4930415K17 gene<br>Putative Ortholog                            | 1.4   | A   | 1.2   | A 0.909 A Genome Res. 10:1617-1630 (2000) |
| 8    | hypothetical protein | 44705_at   | hypothetical protein HSPC195                  | AW121009 | NM_133887     | NP_598448     | -                  | A       | 98.43%<br>RKEN cDNA 4930415K17 gene<br>Putative Ortholog                            | 0.909 | P   | 0.234 | A 0.909 P Genome Res. 10:1617-1630 (2000) |
| 8    | hypothetical protein | 45553_f.at | hypothetical protein FLJ23309                 | AB43915  | -             | -             | 19 24.5 cM         | B       | 87.52%<br>DNA segment, Chr 19, Wayne State University 12, expressed Homolog         | 1.3   | P   | 1.1   | A 0.5 A -                                 |
| 8    | hypothetical protein | 45553_f.at | hypothetical protein FLJ23309                 | AB44786  | -             | -             | 19 24.5 cM         | B       | 87.52%<br>DNA segment, Chr 19, Wayne State University 13, expressed Homolog         | 1.2   | A   | 1.7   | A 3.1 A -                                 |

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Table 77

|    |        |          |                                    |    |           |          |   |   |   |       |   |     |   |       |   |     |   |   |
|----|--------|----------|------------------------------------|----|-----------|----------|---|---|---|-------|---|-----|---|-------|---|-----|---|---|
| 10 | kinase | 50075.at | chromosome 1 open reading frame 28 | 22 | 96570.at  | AV381276 | - | - | A | 98.4% | expressed sequence C81213 Putative Ortholog | 2.5 | P | 0.833 | A | 1   | A | - |
| 10 | kinase | 50075.at | chromosome 1 open reading frame 28 | 23 | 111191.at | AW120521 | - | - | B | 98.4% | expressed sequence C81220 Putative Ortholog | 5.2 | A | 0.357 | A | 2.6 | A | - |

| cat# | category       | human      |  | # | mouse          |         | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology name | MASMS   |         |         | reference |         |         |
|------|----------------|------------|--|---|----------------|---------|---------------|---------------|--------------------|---------|---------------|---------|---------|---------|-----------|---------|---------|
|      |                | Probe ID   | title                                  |   | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref Seq |                    |         |               | 1st P/A | 2nd P/A | 3rd P/A | 1st P/A   | 2nd P/A | 3rd P/A |
| 11   | matrix protein | 52578.s.at | spodin 2, extracellular matrix protein |   | none           |         |               |               |                    |         |               |         |         |         |           |         |         |

| cat# | category         | human      |   | #  | mouse          |          | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology name | MASMS   |         |         | reference |         |         |
|------|------------------|------------|---|----|----------------|----------|---------------|---------------|--------------------|---------|---------------|---------|---------|---------|-----------|---------|---------|
|      |                  | Probe ID   | title   |    | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref Seq |                    |         |               | 1st P/A | 2nd P/A | 3rd P/A | 1st P/A   | 2nd P/A | 3rd P/A |
| 12   | membrane protein | 44783.s.at | hairn/enhancer-of-split related with YRPW motif 1 | 24 | 101913.at      | AW214298 | NM_010423     | NP_034553     | 3.24 cM            | A       | 88.52%        | 1       | M       | 1.3     | A         | 1.2     | P       |
| 12   | membrane protein | 44783.s.at | hairn/enhancer-of-split related with YRPW motif 1 | 25 | 170560.r.at    | AV333303 | NM_010423     | NP_034553     | 3.24 cM            | C       | 88.52%        | 1.5     | P       | 2.3     | P         | 0.909   | A       |
| 12   | membrane protein | 44783.s.at | hairn/enhancer-of-split related with YRPW motif 1 | 26 | 161451.r.at    | AY292193 | NM_010423     | NP_034553     | 3.24 cM            | A       | 89.52%        | 0.909   | A       | 1       | A         | 1.1     | P       |
| 12   | membrane protein | 44783.s.at | hairn/enhancer-of-split related with YRPW motif 1 | 27 | 55671.at       | AJ243895 | NM_010423     | NP_034553     | 3.24 cM            | A       | 89.52%        | 1       | P       | 1       | P         | 0.769   | P       |

| cat# | category    | human    |                                    | # | mouse          |         | mouse Ref Seq | mouse Ref Seq | mouse Map Location | chip ID | homology name | MASMS   |         |         | reference |         |         |
|------|-------------|----------|------------------------------------|---|----------------|---------|---------------|---------------|--------------------|---------|---------------|---------|---------|---------|-----------|---------|---------|
|      |             | Probe ID | title                              |   | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref Seq |                    |         |               | 1st P/A | 2nd P/A | 3rd P/A | 1st P/A   | 2nd P/A | 3rd P/A |
| 16   | oncogenesis | 46200.at | putative cytokine high in normal-1 |   | none           |         |               |               |                    |         |               | -       | -       | -       | -         | -       | -       |

| cat# | category | human      |  | #  | mouse          |          | mouse Ref Seq | mouse Ref Seq | mouse Map Location       | chip ID | homology name | MASMS   |         |         | reference |         |         |
|------|----------|------------|--|----|----------------|----------|---------------|---------------|--------------------------|---------|---------------|---------|---------|---------|-----------|---------|---------|
|      |          | Probe ID   | title                                  |    | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref Seq |                          |         |               | 1st P/A | 2nd P/A | 3rd P/A | 1st P/A   | 2nd P/A | 3rd P/A |
| 17   | others   | 42055.at   | hypothetical protein BC016005          |    | none           |          |               |               |                          |         |               |         |         |         |           |         |         |
| 17   | others   | 50288.at   | hypothetical protein BC016005          |    | none           |          |               |               |                          |         |               |         |         |         |           |         |         |
| 17   | others   | 43849.s.at | hypothetical protein BC013358          | 28 | 94370.at       | AA615075 | -             | -             | -                        | A       | 84.02%        | 0.455   | A       | 3.2     | A         | 4.6     | A       |
| 17   | others   | 45394.s.at | hypothetical protein BC013359          | 28 | 94370.at       | AA615075 | -             | -             | -                        | A       | 88.32%        | 0.455   | A       | 3.2     | A         | 4.6     | A       |
| 17   | others   | 46030.at   | von Ebner minor salivary gland protein | 29 | 160446.at      | U46069   | -             | AAA81591      | 2: D2Mit19n and D2Mit25n | A       | 84.30%        | 1.6     | P       | 3.7     | P         | 3.5     | P       |
| 17   | others   | 46030.at   | von Ebner minor salivary gland protein | 30 | 171144.i.at    | AY057403 | -             | -             | -                        | C       | 84.30%        | 0.909   | A       | 0.556   | A         | 0.933   | A       |

Table 78

|    |        |          |   |    |           |          |           |           |      |        |  |       |   |       |   |       |   |  |
|----|--------|----------|---|----|-----------|----------|-----------|-----------|------|--------|--|-------|---|-------|---|-------|---|--|
| 17 | others | 46300.at | von Ebner minor salivary gland protein  | 31 | 168955.at | A1092579 | -         | -         | C    | 84.30% | Mus musculus von Ebner minor salivary gland protein mRNA, complete cds Putative Ortholog | 1.3   | A | 1.1   | A | 0.714 | A | -  |
| 17 | others | 46300.at | von Ebner minor salivary gland protein  | 32 | 168746.at | A1090196 | -         | -         | C    | 84.30% | Mus musculus von Ebner minor salivary gland protein mRNA, complete cds Putative Ortholog | 0.833 | A | 0.809 | A | 1.3   | A | -  |
| 17 | others | 48916.at | LUX1 protein: PLUNC (salivary gland and nasal epithelium clone); tracheal epithelium enriched protein | -  | -         | A1845714 | NM_011126 | NP_035250 | 2 H1 | -      | salivary gland and nasal epithelium enriched transcript Putative Ortholog                | 1.2   | P | 1     | P | 1     | P | J Biol. Chem. 274 (19), 13899-13703 (1999) |

| cat# | category                | human | Probe ID | title  | #  | mouse     | GenBank | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | chip ID | homology | name  | 1st   | 1st P/A | 2nd | 2nd P/A | 3rd   | 3rd P/A | reference                            |
|------|-------------------------|-------|----------|--|----|-----------|---------|---------------|----------------|--------------------|---------|----------|---|-------|---------|-----|---------|-------|---------|--------------------------------------|
| 20   | protein binding protein |       | 46271.at | FK506-binding protein 5  | 31 | 94297.at  | U18999  | NM_010220     | NP_034350      | 17 13.0 cM         | A       |          | FK506-binding protein 5 (FKBP2) Curated Ortholog                                | 0.244 | P       | 2   | P       | 4.4   | P       | Mol. Cell. Biol. 15:4395-4402 (1995) |
| 20   | protein binding protein |       | 54132.at | calciprotein transition initiation factor 4E-binding protein 1 | 34 | 100638.at | U28556  | NM_007318     | NP_031944      | 8 8.0 cM           | A       |          | calciprotein transition initiation factor 4E-binding protein 1 Curated Ortholog | 0.833 | P       | 1.1 | P       | 0.909 | P       | J Biol. Chem. 270:18511-18538 (1995) |

| cat# | category           | human | Probe ID | title                       | #  | mouse    | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | chip ID | homology | name  | 1st | 1st P/A | 2nd | 2nd P/A | 3rd   | 3rd P/A | reference                  |
|------|--------------------|-------|----------|-----------------------------|----|----------|----------|---------------|----------------|--------------------|---------|----------|---|-----|---------|-----|---------|-------|---------|----------------------------|
| 25   | structural protein |       | 44720.at | collagen, type XII, alpha 1 | 35 | 82313.at | A1840086 | NM_007730     | NP_031755      | 9 53.0 cM          | A       |          | procollagen, type XII, alpha 1 Curated Ortholog | 0.4 | A       | 2   | A       | 0.526 | A       | Genomics 14:225-231 (1992) |
| 25   | structural protein |       | 44730.at | collagen, type XII, alpha 1 | 35 | 82314.at | U25852   | NM_007730     | NP_031755      | 9 53.0 cM          | A       |          | procollagen, type XII, alpha 1 Curated Ortholog | 1.2 | A       | 1   | A       | 1.4   | A       | Genomics 14:225-231 (1992) |

| cat# | category    | human | Probe ID | title  | #  | mouse     | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | chip ID | homology | name  | 1st | 1st P/A | 2nd   | 2nd P/A | 3rd   | 3rd P/A | reference   |
|------|-------------|-------|----------|--|----|-----------|----------|---------------|----------------|--------------------|---------|----------|---|-----|---------|-------|---------|-------|---------|---|
| 27   | transporter |       | 45926.at | solute carrier family 11 (proton-coupled divalent metal ion transporter), member 3 | 37 | 105069.at | A125982  | NM_016917     | NP_056813      | 1 B                | B       | 92.0%    | solute carrier family 11 (proton-coupled divalent metal ion transporter), member 3 Putative Ortholog (highly conserved) | 1.2 | P       | 0.714 | P       | 0.714 | P       | Mol. Cell. 5:289-305 (2000)                         |
| 27   | transporter |       | 47575.at | potassium large conductance calcium-activated channel, subfamily M, alpha member 1 | 33 | 87755.at  | U09383   | NM_010610     | NP_034740      | 14 A3              | A       |          | potassium large conductance calcium-activated channel, subfamily M, alpha member 1 Curated Ortholog                     | 2   | A       | 2     | P       | 1     | A       | Science 261:221-224 (1993)                          |
| 27   | transporter |       | 53768.at | potassium large conductance calcium-activated channel, subfamily M, alpha member 1 | 38 | 87756.at  | U09383   | NM_010610     | NP_034740      | 14 A3              | A       |          | potassium large conductance calcium-activated channel, subfamily M, alpha member 1 Curated Ortholog                     | 2   | A       | 2     | P       | 1     | A       | Science 261:221-224 (1993)                          |
| 27   | transporter |       | 48948.at | solute carrier family 34 (sodium phosphate), member 2                              | 39 | 98994.at  | AF081498 | NM_011402     | NP_035532      | -                  | A       |          | solute carrier family 34 (sodium phosphate), member 2 Curated Ortholog  | 1.1 | P       | 1.1   | P       | 1     | P       | Proc. Natl. Acad. Sci. U.S.A. 85:14564-14569 (1998) |
| 27   | transporter |       | 51261.at | SAC2 suppressor of actin mutations 2-like (yeast)                                  | -  | -         | -        | -             | -              | -                  | -       | -        | -   | -   | -       | -     | -       | -     | -       | -   |

| cat# | category | human | Probe ID | title | # | mouse | GenBank | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | chip ID | homology | name | 1st | 1st P/A | 2nd | 2nd P/A | 3rd | 3rd P/A | reference |
|------|----------|-------|----------|-------|---|-------|---------|---------------|----------------|--------------------|---------|----------|------|-----|---------|-----|---------|-----|---------|-----------|
|      |          |       |          |       |   |       |         |               |                |                    |         |          |      |     |         |     |         |     |         |           |

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Table 80

| human |             | mouse     |               |   |                |         |               |               |                    |         |          | MASMS |         |         |         |           |
|-------|-------------|-----------|---------------|---|----------------|---------|---------------|---------------|--------------------|---------|----------|-------|---------|---------|---------|-----------|
| cat # | category    | Probe ID  | title         | # | mouse Probe ID | GenBank | mouse_Ref Seq | mouse_Ref Seq | mouse_Map Location | chip ID | homology | name  | 1st P/A | 2nd P/A | 3rd P/A | reference |
| 3     | cell cycles | 5704_s.at | RGC32 protein |   | none           |         |               |               |                    |         |          |       | -       | -       | -       |           |

| human |           | mouse    |  |   |                |          |               |               |                    |         |          | MASMS  |         |         |         |                 |
|-------|-----------|----------|--|---|----------------|----------|---------------|---------------|--------------------|---------|----------|--|---------|---------|---------|-----------------|
| cat # | category  | Probe ID | title  | # | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref Seq | mouse_Map Location | chip ID | homology | name   | 1st P/A | 2nd P/A | 3rd P/A | reference       |
| 4     | chemokine | 63823.at | small inducible cytokine subfamily B (Cys-X-Cys), member 14 (BRAX) | 1 | 56553.at       | AW120768 | NM_019568     | NP_062514     | -                  | A       | 94.18%   | small inducible cytokine subfamily B (Cys-X-Cys), member 14 Putative Ortholog (highly conserved) | 1.3     | P       | 0.56    | A 0.56 M (2000) |

| human |                      | mouse      |  |   |                |          |               |               |                    |         |          | MASMS  |         |         |         |                 |
|-------|----------------------|------------|--|---|----------------|----------|---------------|---------------|--------------------|---------|----------|--|---------|---------|---------|-----------------|
| cat # | category             | Probe ID   | title  | # | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref Seq | mouse_Map Location | chip ID | homology | name   | 1st P/A | 2nd P/A | 3rd P/A | reference       |
| 2     | hypothetical protein | 48793.at   | KIAA0878 protein   | 2 | 113895.at      | AW208828 | -             | -             | -                  | B       | 94.02%   | RIKEN cDNA 281003901 gene Putative Ortholog (highly conserved)   | 0.67    | P       | 0.83    | A 0.77 P -      |
| 8     | hypothetical protein | 48198.at   | hypothetical protein FLJ20048  |   | -              | BB553960 | -             | -             | -                  | -       | 92.20%   | ESTs   | -       | -       | -       | -               |
| 3     | hypothetical protein | 54791.at   | hypothetical protein MGC13102  | 3 | 183461.at      | AA589180 | NM_024246     | NP_077208     | 3 F1               | B       | 82.67%   | RIKEN cDNA 2310042602 gene Homolog                               | 1       | A       | 1.3     | P 0.39 A (1999) |
| 4     | hypothetical protein | 54791.at   | hypothetical protein MGC13102  | 4 | 170293.L.at    | AV092570 | NM_024246     | NP_077208     | 3 F1               | C       | 82.67%   | RIKEN cDNA 2310042602 gene Homolog                               | 1.7     | M       | 1.5     | A 1 M (1999)    |
| 8     | hypothetical protein | 56234.L.at | ESTs, weakly similar to Hypothetical protein FLJ20378 (Homo sapiens) [H.sapiens] |   | none           |          |               |               |                    |         |          |  | -       | -       | -       | -               |
| 8     | hypothetical protein | 60939.L.at | FLJ00189 protein   |   | none           |          |               |               |                    |         |          |  | -       | -       | -       | -               |
| 8     | hypothetical protein | 60940.L.at | FLJ00189 protein   |   | none           |          |               |               |                    |         |          |  | -       | -       | -       | -               |
| 8     | hypothetical protein | 62490.L.at | hypothetical protein FLJ10298  | 5 | 163845.L.at    | AA387607 | NM_026345     | NP_080621     | 6 G1               | B       | 84.64%   | RIKEN cDNA 9130403013 gene Putative Ortholog                     | 1       | P       | 2.1     | P 1 P (1999)    |
| 8     | hypothetical protein | 62372.at   | KIAA1376 protein   | 6 | 111405.at      | AB47396  | -             | -             | -                  | B       | 95.28%   | ESTs Putative Ortholog (highly conserved)                        | 0.67    | P       | 0.67    | P 0.83 P -      |
| 8     | hypothetical protein | 64047.at   | KIAA1376 protein   | 6 | 111405.at      | AB47396  | -             | -             | -                  | B       | 95.28%   | ESTs Putative Ortholog (highly conserved)                        | 0.67    | P       | 0.67    | P 0.83 P -      |
| 8     | hypothetical protein | 63150.at   | ESTs, weakly similar to 338022 Hypothetical protein [H.sapiens]                  |   | none           |          |               |               |                    |         |          |  | -       | -       | -       | -               |
| 8     | hypothetical protein | 63342.at   | hypothetical protein LOC51316  | 7 | 88092.at       | AA760307 | NM_139168     | NP_631937     | 5 E3               | A       | 85.11%   | oncin Putative Ortholog  | 1.8     | P       | 2.2     | P 1.6 P (1999)  |
| 8     | hypothetical protein | 64345.s.at | KIAA1102 protein   |   | none           |          |               |               |                    |         |          |  |         |         |         |                 |
| 8     | hypothetical protein | 63426.at   | Homo sapiens cDNA FLJ11041 fl., clone PLACE1004405                               | 8 | 105858.at      | AB47445  | -             | -             | -                  | B       | 93.80%   | expressed sequence BB120430 Putative Ortholog (highly conserved) | 0.93    | A       | 1.5     | A 0.81 A -      |
| 8     | hypothetical protein | 63876.at   | hypothetical protein MGC16207  |   | none           |          |               |               |                    |         |          |  |         |         |         |                 |

| human |          | mouse    |       |   |                |         |               |               |                    |         |          | MASMS |         |         |         |           |
|-------|----------|----------|-------|---|----------------|---------|---------------|---------------|--------------------|---------|----------|-------|---------|---------|---------|-----------|
| cat # | category | Probe ID | title | # | mouse Probe ID | GenBank | mouse_Ref Seq | mouse_Ref Seq | mouse_Map Location | chip ID | homology | name  | 1st P/A | 2nd P/A | 3rd P/A | reference |

Table 81

|    |        |          |                 |    |             |          |           |           |           |   |        |  |     |   |     |   |     |   |                           |
|----|--------|----------|-----------------|----|-------------|----------|-----------|-----------|-----------|---|--------|--|-----|---|-----|---|-----|---|---------------------------|
| 10 | kinase | 61873.at | glycerol kinase | 9  | 97525.at    | U48403   | NM_000194 | NP_032220 | X 33.0 cM | A | 92.70% | glycerol kinase Putative Ortholog (highly conserved) | 0.6 | A | 0.6 | A | 1.7 | A | Genomica 36530-534 (1996) |
| 10 | kinase | 61873.at | glycerol kinase | 10 | 169383.r.at | AV087577 | NM_000194 | NP_032220 | X 33.0 cM | C | 92.70% | glycerol kinase Curated Ortholog                     | 1.4 | A | 1   | A | 1   | A | Genomica 36530-534 (1996) |

| cat # | category         | human Probe ID | human title                | #  | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | mouse Map chip ID | homology | name  | MASMS |     |     |     |     |     | reference |
|-------|------------------|----------------|----------------------------|----|----------------|----------|---------------|----------------|--------------------|-------------------|----------|---|-------|-----|-----|-----|-----|-----|-----------|
|       |                  |                |                            |    |                |          |               |                |                    |                   |          |   | 1st   | 2nd | 2nd | 2nd | 3rd | 3rd |           |
| 12    | membrane protein | 63988.at       | prostate stem cell antigen | 11 | 160602.at      | AV206488 | -             | -              | 5 53.0 cM          | A                 | 80.69%   | prostate stem cell antigen Curated Ortholog | 1     | A   | 0.7 | A   | 1.3 | A   | -         |

| cat # | category | human Probe ID | human title  | #  | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | mouse Map chip ID | homology | name  | MASMS |     |     |     |      |     | reference                             |
|-------|----------|----------------|--|----|----------------|----------|---------------|----------------|--------------------|-------------------|----------|---|-------|-----|-----|-----|------|-----|---------------------------------------|
|       |          |                |  |    |                |          |               |                |                    |                   |          |   | 1st   | 2nd | 2nd | 2nd | 3rd  | 3rd |                                       |
| 17    | others   | 55440.at       | palate, lung and nasal epithelium carcinoma associated | 12 | 97900.at       | A1845714 | NM_011126     | NP_033258      | 2 H1               | A                 | 88.24%   | palate, lung and nasal epithelium expressed transcript Curated Ortholog | 1.2   | P   | 1   | P   | 1    | P   | J. Biol. Chem. 274:13688-13703 (1999) |
| 17    | others   | 55442.at       | palate, lung and nasal epithelium carcinoma associated | 12 | 97900.at       | A1845714 | NM_011126     | NP_033258      | 2 H1               | A                 | 88.24%   | palate, lung and nasal epithelium expressed transcript Curated Ortholog | 1.2   | P   | 1   | P   | 1    | P   | J. Biol. Chem. 274:13688-13703 (1999) |
| 17    | others   | 63813.at       | CGI-81 protein   | 13 | 169813.at      | AV297762 | NM_021554     | NP_067529      | 7 F1-F2            | C                 | 98.06%   | RKEN cDNA 0510012009 gene Curated Ortholog                              | 0.71  | A   | 1.7 | A   | 0.77 | A   | Genome Res. 10:1617-1630 (2000)       |
| 17    | others   | 63813.at       | CGI-81 protein   | 14 | 95045.at       | A1844469 | NM_021554     | NP_067529      | 7 F1-F2            | A                 | 98.06%   | RKEN cDNA 0510012009 gene Curated Ortholog                              | 1     | P   | 1.3 | P   | 0.91 | P   | Genome Res. 10:1617-1630 (2000)       |

| cat # | category           | human Probe ID | human title | # | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | mouse Map chip ID | homology | name  | MASMS |     |     |     |     |     | reference |
|-------|--------------------|----------------|-------------|---|----------------|----------|---------------|----------------|--------------------|-------------------|----------|---|-------|-----|-----|-----|-----|-----|-----------|
|       |                    |                |             |   |                |          |               |                |                    |                   |          |   | 1st   | 2nd | 2nd | 2nd | 3rd | 3rd |           |
| 25    | structural protein | 62998.at       | keratin 6B  | - | -              | AF312019 | -             | -              | -                  | -                 | 88.50%   | keratin complex 2, basic, pseudogene 1 (Krt2-ps1) | -     | -   | -   | -   | -   | -   | -         |

| cat # | category             | human Probe ID | human title                        | #  | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | mouse Map chip ID | homology | name                                 | MASMS |     |     |     |      |     | reference                       |
|-------|----------------------|----------------|------------------------------------|----|----------------|----------|---------------|----------------|--------------------|-------------------|----------|--------------------------------------|-------|-----|-----|-----|------|-----|---------------------------------|
|       |                      |                |                                    |    |                |          |               |                |                    |                   |          |                                      | 1st   | 2nd | 2nd | 2nd | 3rd  | 3rd |                                 |
| 26    | transcription factor | 64071.at       | equilibrin regulatory factor PRF-1 | -  | none           | -        | -             | -              | -                  | -                 | -        | -                                    | -     | -   | -   | -   | -    | -   | -                               |
| 26    | transcription factor | 64121.at       | glioma-amplified sequence-41       | 15 | 113151.at      | A1854589 | NM_026570     | NP_080846      | 10 D2              | B                 | 88.84%   | glioma-amplified sequence-41 Homolog | 1     | P   | 1.2 | P   | 1    | P   | Meth. Enzymol. 303:19-44 (1999) |
| 26    | transcription factor | 64121.at       | glioma-amplified sequence-41       | 16 | 1710961.at     | AV045457 | NM_026570     | NP_080846      | 10 D2              | C                 | 89.84%   | glioma-amplified sequence-41 Homolog | 2.8   | A   | 1.4 | A   | 0.59 | A   | Meth. Enzymol. 303:19-44 (1999) |
| 26    | transcription factor | 64121.at       | glioma-amplified sequence-41       | 17 | 1690031.at     | AV121958 | NM_026570     | NP_080846      | 10 D2              | C                 | 89.84%   | glioma-amplified sequence-41 Homolog | 1.1   | P   | 1   | P   | 1    | P   | Meth. Enzymol. 303:19-44 (1999) |

| cat # | category | human Probe ID | human title                            | #    | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref SeqP | mouse Map Location | mouse Map chip ID | homology | name | MASMS |     |     |     |     |     | reference |
|-------|----------|----------------|--|------|----------------|---------|---------------|----------------|--------------------|-------------------|----------|------|-------|-----|-----|-----|-----|-----|-----------|
|       |          |                |  |      |                |         |               |                |                    |                   |          |      | 1st   | 2nd | 2nd | 2nd | 3rd | 3rd |           |
|       |          | 64163.at       | Homo sapiens clone 25194 mRNA sequence | none | none           | -       | -             | -              | -                  | -                 | -        | -    | -     | -   | -   | -   | -   | -   | -         |
|       |          | 55599.at       | hypothetical protein                   | none | none           | -       | -             | -              | -                  | -                 | -        | -    | -     | -   | -   | -   | -   | -   | -         |
|       |          | 54285.at       | ESTs                                   | none | none           | -       | -             | -              | -                  | -                 | -        | -    | -     | -   | -   | -   | -   | -   | -         |

Table 82

| cat# | category             | human    |   | mouse |                   |          |                  |                   |                       |            |          |   |            | MASMS      |            |                                    |
|------|----------------------|----------|---|-------|-------------------|----------|------------------|-------------------|-----------------------|------------|----------|---|------------|------------|------------|------------------------------------|
|      |                      | Probe ID | title   | #     | mouse<br>Probe ID | GenBank  | mouse Ref<br>Seq | mouse Ref<br>SeqP | mouse Map<br>Location | chip<br>ID | homology | name  | 1st<br>P/A | 2nd<br>P/A | 3rd<br>P/A | reference                          |
| 2    | cell adhesion        | 79615.at | desmocollin 3 isoform a, b  | 1     | 57655.at          | Y11169   | NM_007882        | NP_031908         | 18 7.0 cM             | A          | 87.5%    | desmocollin 3 Curated Ortholog  | 0.3        | A          | 0.8        | A 1.2 A (1997)                     |
| 5    | cytokine related     | 74633.at | tumor necrosis factor, alpha-induced protein 2  | 2     | 160469.at         | L24118   | NM_009396        | NP_033422         | 12 58.0 cM            | A          | 83.7%    | tumor necrosis factor, alpha-induced protein 2 Curated Ortholog             | 0.6        | A          | 0.7        | A 0.6 A 3540 (1994)                |
| 7    | enzyme               | 74557.at | 24-dehydrocholesterol reductase   |       | none              |          |                  |                   |                       |            |          |   | -          | -          | -          | reference                          |
| 17   | others               | 82231.at | ras homolog gene family, member V   | 3     | 133045.at         | AUD40173 | -                | -                 | -                     | C          | 90.7%    | clone MCC3937 IMAGE:3003249. Putative Ortholog                              | 0.3        | A          | 0.3        | A 0.4 A -                          |
| 22   | proteinase inhibitor | 75248.at | serine (or cysteine) proteinase inhibitor, clade A (alpha-1 antiproteinase, antitrypsin) member 3 | 4     | 103611.at         | AB012893 | NM_010591        | NP_034711         | 16 B5                 | A          | 89.8%    | integrin-associated protein Putative Ortholog                               | 1          | P          | 1          | P J. Cell Biol. 123:485-496 (1993) |
|      |                      | 69289.at | Human spleen cDNA FLJ12289 (h. clone MAMNA 1001788)   | 5     | 94780.at          | A1897635 | -                | -                 | -                     | A          | 86.3%    | DNA segment, Chr 18, Wayne State University 73, expressed Putative Ortholog | 0.7        | P          | 0.6        | P 1 P -                            |
|      |                      | 69289.at |   | 6     | 135442.at         | A1593316 | -                | -                 | -                     | C          | 86.3%    | DNA segment, Chr 18, Wayne State University 73, expressed Putative Ortholog | 0.7        | A          | 1          | A 1.5 A -                          |
|      |                      | 70124.at | ESTs  |       | none              |          |                  |                   |                       |            |          |   | -          | -          | -          | -                                  |
|      |                      | 72804.at | ESTs  |       | none              |          |                  |                   |                       |            |          |   | -          | -          | -          | -                                  |
|      |                      | 78920.at | ESTs  |       | none              |          |                  |                   |                       |            |          |   | -          | -          | -          | -                                  |
|      |                      | 83076.at | ESTs  |       | none              |          |                  |                   |                       |            |          |   | -          | -          | -          | -                                  |
|      |                      | 83988.at | ESTs  |       | none              |          |                  |                   |                       |            |          |   | -          | -          | -          | -                                  |
|      |                      | 84270.at | ESTs, Weakly similar to E48A HUMAN E48 ANTIGEN PRECURSOR [H.sapiens]                              | 7     | 130772.at         | A1834844 | NM_011838        | NP_035568         | 15 D3                 | C          | 85.8%    | Ly6/neurotoxin 1 Putative Ortholog  | 0.8        | P          | 1.1        | A 0.9 A Neuron 22- (1899)          |
|      |                      | 84270.at | ESTs, Weakly similar to E48A HUMAN E48 ANTIGEN PRECURSOR [H.sapiens]                              | 8     | 137205.at         | A2838851 | NM_011838        | NP_035568         | 15 D3                 | C          | 85.8%    | Ly6/neurotoxin 1 Putative Ortholog  | 0.2        | A          | 0.4        | A 0.7 A Neuron 22- (1899)          |
|      |                      | 84903.at | ESTs  |       | none              |          |                  |                   |                       |            |          |   | -          | -          | -          | -                                  |
|      |                      | 87539.at | ESTs  |       | none              |          |                  |                   |                       |            |          |   | -          | -          | -          | -                                  |
|      |                      | 88338.at | clone IMAGE-2229690   |       | none              |          |                  |                   |                       |            |          |   | -          | -          | -          | -                                  |

Table 83

| human    | mouse                | GenBank    | mouse Ref Seq   | mouse Ref Seq | mouse Map Location | homology  | name       | 1st P/A  | 2nd P/A  | 3rd P/A  | reference |   |      |   |                                     |
|----------|----------------------|------------|---|---------------|--------------------|-----------|------------|----------|----------|----------|-----------|---|------|---|-------------------------------------|
| category | category             | category   | category  | category      | category           | category  | category   | category | category | category | category  |   |      |   |                                     |
| 1        | apoptosis            | 80557.1.at | lecitin, galactoside-binding, soluble, 1 (galectin 1)                         | X15868        | NM_008495          | NP_023821 | 15 44.9 cM | A        | 1.6      | A        | 2         | A | 1.3  | A | Cancer Res. 48:645-649(1988)        |
| 2        | cell adhesion        | 88239.1.at | contactin 1   | X14943        | NM_007721          | NP_031753 | 15 55.1 cM | A        | 1.3      | M        | 1.9       | P | 0.44 | P | J. Cell Biol. 109:715-780(1989)     |
| 2        | cell adhesion        | 88239.1.at | contactin 1   | X14943        | NM_007721          | NP_031753 | 15 55.1 cM | B        | 1.7      | P        | 0.91      | A | 0.77 | A | J. Cell Biol. 109:715-780(1989)     |
| 2        | cell adhesion        | 88239.1.at | contactin 1   | AF43096       | NM_007721          | NP_031753 | 15 55.1 cM | B        | 0.83     | A        | 1         | A | 1.1  | A | J. Cell Biol. 109:715-780(1989)     |
| 2        | cell adhesion        | 88239.1.at | contactin 1   | AF43096       | NM_007721          | NP_031753 | 15 55.1 cM | C        | 0.87     | A        | 1.1       | A | 1.5  | A | J. Cell Biol. 109:715-780(1989)     |
| 7        | enzyme               | 81926.at   | peptidylarginine deiminase type I   | AB013846      | NM_011059          | NP_035189 | 4          | A        | 1.3      | A        | 0.83      | A | 0.87 | A | Eur. J. Biochem. 259:660-663 (1995) |
| 7        | enzyme               | 81926.at   | peptidylarginine deiminase type I   | AB013846      | NM_011059          | NP_035189 | 4          | A        | 2.2      | A        | 1.4       | A | 1.5  | A | Eur. J. Biochem. 259:660-663 (1995) |
| 7        | enzyme               | 89741.at   | GaINAc alpha-2, 6-sialyltransferase 1, long form                              | none          | none               | none      | none       | none     |          |          |           |   |      |   |                                     |
| 8        | hypothetical protein | 83750.at   | hypothetical protein FLJ10718   | none          | none               | none      | none       | none     |          |          |           |   |      |   |                                     |
| 8        | hypothetical protein | 77516.1.at | prominin-related protein mRNA, variant B, complete cds, alternatively spliced | none          | none               | none      | none       | none     |          |          |           |   |      |   |                                     |
| 8        | hypothetical protein | 86024.at   | hypothetical protein MQC14128   | none          | none               | none      | none       | none     |          |          |           |   |      |   |                                     |
| 8        | hypothetical protein | 83360.at   | hypothetical protein MQC14128   | none          | none               | none      | none       | none     |          |          |           |   |      |   |                                     |
| 27       | transporter          | 91275.at   | aquaporin 5   | AF182792      | NM_009701          | NP_035831 | 15 56.8 cM | B        | 0.77     | P        | 0.83      | P | 0.59 | P | Mamm. Genome 10:406-505 (1999)      |
| 78769.at | ESTs                 | none       | none  | none          | none               | none      | none       | none     |          |          |           |   |      |   |                                     |
| 83716.at | ESTs                 | none       | none  | none          | none               | none      | none       | none     |          |          |           |   |      |   |                                     |

[0229] In addition, the nucleotide sequences and the amino acid sequences of the mouse counterparts are shown

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in SEQ ID NOs: 954 to 1635. The details are as follows.

The mouse counterparts of the human genes whose expression levels were increased by IL-13 (AI method):

954 to 1174 (nucleotide sequence)  
1175 to 1375 (amino acid sequence)

The mouse counterparts of the human genes whose expression levels were decreased by IL-13 (IMM method):

1376 to 1505 (nucleotide sequence)  
1506 to 1635 (amino acid sequence)

With respect to each mouse counterpart, Probe ID, GenBank Accession No. , Ref SEQ NO, and the corresponding SEQ ID NO in the Sequence Listing are shown in Tables 84 to 113.



Table 84

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 2     | 160469_at         | M62470   | NM_011580        | NP_035710         | 954                             | 1376                            |
| 2     | 92593_at          | D13664   | NM_015784        | NP_056599         | 955                             | 1377                            |
| 2     | 101730_at         | D82029   | NM_007666        | NP_031692         | 956                             | 1378                            |
| 2     | 101141_at         | M33036   | -                | -                 | 957                             | 1379                            |
| 2     | 96752_at          | M90551   | -                | -                 | 957                             | 1379                            |
| 2     | none              |          |                  |                   |                                 |                                 |
| 2     | 105606_at         | AW210072 | NM_028810        | NP_083086         | 958                             | 1380                            |
| 2     | 163053_at         | AA716925 | NM_028810        | NP_083086         | 958                             | 1380                            |

| mouse |                   |         |                  |                   |                                 |                                 |
|-------|-------------------|---------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 3     | 160545_at         | M86183  | NM_007632        | NP_031658         | 959                             | 1381                            |
| 3     | 160545_at         | M86183  | NM_007632        | NP_031658         | 959                             | 1381                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 4     | 140659_at         | AA174767 | NM_019494        | NP_062367         | 960                             | 1382                            |
| 4     | 93856_at          | M33266   | NM_021274        | NP_067249         | 961                             | 1383                            |

| mouse |                   |         |                  |                   |                                 |                                 |
|-------|-------------------|---------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 5     | 95344_at          | U65747  | NM_008356        | NP_032382         | 962                             | 1384                            |
| 5     | 93300_at          | X57413  | NM_009367        | NP_033393         | 963                             | 1385                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 6     | 97261_at          | AF055664 | NM_008298        | NP_032324         | 964                             | 1386                            |
| 6     | 101979_at         | AF055638 | NM_011817        | NP_035947         | 965                             | 1387                            |
| 6     | 109336_at         | AI035425 | NM_011817        | NP_035947         | 965                             | 1387                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 7     | 104420_at         | U43428   | NM_010927        | NP_035057         | 966                             | 1388                            |
| 7     | 107939_at         | AI021374 | -                | -                 | 967                             | -                               |
| 7     | none              |          |                  |                   |                                 |                                 |
| 7     | 114376_at         | AW259579 | NM_011961        | NP_036091         | 968                             | 1389                            |
| 7     | 92634_at          | U12620   | NM_010074        | NP_034204         | 969                             | 1390                            |
| 7     | 96918_at          | AI790931 | NM_019395        | NP_062268         | 970                             | 1391                            |
| 7     | 165678_at         | AI482191 | -                | -                 | 971                             | -                               |
| 7     | -                 | X69657   | NM_011710        | NP_035840         | 972                             | 1392                            |
| 7     | 169670_at         | AV028295 | NM_008290        | NP_032316         | 973                             | 1393                            |

Table 85

|   |             |          |           |           |     |      |
|---|-------------|----------|-----------|-----------|-----|------|
| 7 | 166141_i.at | AV224027 | NM_008290 | NP_032316 | 973 | 1393 |
| 7 | 101891_at   | Y09517   | NM_008290 | NP_032316 | 973 | 1393 |
| 7 | 111949_at   | AJ853171 | -         | -         | 974 | -    |
| 7 | 93085_at    | D44456   | NM_013585 | NP_038513 | 975 | 1394 |
| 7 | 102717_at   | X58077   | -         | -         | 976 | 1395 |
| 7 | 102717_at   | X58077   | -         | -         | 976 | 1395 |
| 7 | 93352_at    | M55154   | NM_009373 | NP_033399 | 977 | 1396 |
| 7 | none        |          |           |           |     |      |
| 7 | 161043_r.at | AV277568 | NM_015762 | NP_056577 | 978 | 1397 |
| 7 | 99985_at    | AB027565 | NM_015762 | NP_056577 | 978 | 1397 |
| 7 | 161284_r.at | AV299386 | NM_015762 | NP_056577 | 978 | 1397 |
| 7 | 162642_at   | AJ854834 | NM_015762 | NP_056577 | 978 | 1397 |
| 7 | -           | AF159230 | NM_019949 | NP_064333 | 979 | 1398 |
| 7 | 94431_at    | D16106   | NM_009175 | NP_033201 | 980 | 1399 |
| 7 | 167200_r.at | AV024481 | NM_009175 | NP_033201 | 980 | 1399 |
| 7 | 102410_at   | AF019385 | NM_010474 | NP_034604 | 981 | 1400 |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 8     | 110469_at      | AJ844322 | -             | -              | 982                          | -                            |
| 8     | 109915_at      | AA170781 | NM_018851     | NP_061339      | 983                          | 1401                         |
| 8     | 103080_at      | U15635   | NM_018851     | NP_061339      | 983                          | 1401                         |
| 8     | 166590_at      | AV245197 | -             | -              | 984                          | -                            |
| 8     | -              | AK020957 | -             | -              | 985                          | -                            |
| 8     | -              | BF321302 | -             | -              | 986                          | -                            |
| 8     | -              | none     | -             | -              |                              |                              |
| 8     | -              | none     | -             | -              |                              |                              |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 9     | 98822_at       | X56602   | NM_015783     | NP_056588      | 987                          | 1402                         |
| 9     | 98822_at       | X56602   | NM_015783     | NP_056588      | 987                          | 1402                         |
| 9     | 100981_at      | U43084   | NM_008331     | NP_032357      | 988                          | 1403                         |
| 9     | 168299_f.at    | AV090198 | NM_008331     | NP_032357      | 988                          | 1403                         |
| 9     | 100981_at      | U43084   | NM_008331     | NP_032357      | 988                          | 1403                         |
| 9     | 168299_f.at    | AV090198 | NM_008331     | NP_032357      | 988                          | 1403                         |
| 9     | 103432_at      | AW122677 | NM_020583     | NP_065608      | 989                          | 1404                         |
| 9     | 109385_at      | AJ315194 | NM_021384     | NP_067359      | 990                          | 1405                         |
| 9     | none           |          |               |                |                              |                              |
| 9     | 98501_at       | Y07519   | NM_010743     | NP_034873      | 991                          | 1406                         |
| 9     | 98500_at       | D13695   | NM_010743     | NP_034873      | 991                          | 1406                         |
| 9     | none           |          |               |                |                              |                              |

Table 86

|   |           |          |           |           |     |      |
|---|-----------|----------|-----------|-----------|-----|------|
| 9 | -         | AW986054 | -         | -         | 992 | -    |
| 9 | -         | AW986054 | -         | -         | 992 | -    |
| 9 | -         | AK003407 | -         | BAB22771  | 993 | 1407 |
| 9 | none      |          |           |           |     |      |
| 9 | none      |          |           |           |     |      |
| 9 | 97444_at  | AI844520 | NM_023065 | NP_075552 | 994 | 1408 |
| 9 | 164423_at | AV076807 | NM_023065 | NP_075552 | 994 | 1408 |
| 9 | 164273_at | AV276912 | -         | -         | 995 | -    |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 10    | 97823_g_at     | AW122689 | -             | -              | 996                          | -                            |
| 10    | 97822_at       | AW122689 | -             | -              | 996                          | -                            |
| 10    | 97821_at       | AI646056 | -             | -              | 997                          | -                            |
| 10    | 101435_at      | AF033275 | NM_009649     | NP_033779      | 998                          | 1409                         |
| 10    | 163162_at      | AI060985 | NM_019921     | NP_064305      | 999                          | 1410                         |
| 10    | 110116_at      | AW124632 | -             | -              | 1000                         | -                            |
| 10    | 100951_at      | AF014010 | NM_008861     | NP_032887      | 1001                         | 1411                         |
| 10    | 99136_at       | X63535   | NM_009465     | NP_033491      | 1002                         | 1412                         |

| mouse |                |          |                      |                      |                              |                              |
|-------|----------------|----------|----------------------|----------------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq        | mouse_Ref SeqP       | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 12    | -              | -        | NM_008591            | NP_032617            | 1003                         | 1413                         |
| 12    | -              | -        | NM_008591            | NP_032617            | 1003                         | 1413                         |
| 12    | 100309_at      | Y00671   | NM_008591            | NP_032617            | 1003                         | 1413                         |
| 12    | 96935_at       | AW011791 | NM_026018            | NP_080294            | 1004                         | 1414                         |
| 12    | 162531_at      | AW048375 | -                    | -                    | 1005                         | -                            |
| 12    | 101410_at      | AB000713 | NM_009903            | NP_034033            | 1006                         | 1415                         |
| 12    | 100086_at      | D00622   | -                    | BAA00500             | 1007                         | -                            |
| 12    | 161988_f_at    | AV234541 | -                    | -                    | 1008                         | -                            |
| 12    | none           |          |                      |                      |                              |                              |
| 12    | 104516_at      | U82758   | NM_013805            | NP_038833            | 1009                         | 1416                         |
| 12    | -              | AY013776 | NM_053140            | NP_044370            | 1010                         | 1417                         |
| 12    | 103617_at      | D63679   | NM_010016            | NP_034146            | 1011                         | 1418                         |
| 12    | 164905_r_at    | AV358386 | NM_010016            | NP_034146            | 1011                         | 1418                         |
| 12    | 107626_at      | AA174516 | NM_010016            | NP_034146            | 1011                         | 1418                         |
| 12    | 115133_at      | AI875165 | NM_021401, NM_026907 | NP_067376, NP_081183 | 1012, 1013                   | 1419, 1420                   |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 13    | 104509_at      | AF059213 | NM_009890     | NP_034020      | 1014                         | 1421                         |
| 13    | 133666_at      | AI450812 | NM_009890     | NP_034020      | 1014                         | 1421                         |

Table 87

|    |             |          |           |           |      |      |
|----|-------------|----------|-----------|-----------|------|------|
| 13 | 98758_at    | L34570   | NM_009660 | NP_033790 | 1015 | 1422 |
| 13 | 102696_s_at | A1747895 | NM_019640 | NP_062614 | 1016 | 1423 |
| 13 | 102696_a_at | A1747895 | NM_019640 | NP_062614 | 1016 | 1423 |
| 13 | 102697_at   | U46934   | NM_019640 | NP_062614 | 1016 | 1423 |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 14    | 101433_at      | AF010452 | NM_008209     | NP_032235      | 1017                         | 1424                         |
| 14    | none           |          |               |                |                              |                              |
| 14    | 98438_f_at     | X16202   | NM_010394     | NP_034524      | 1018                         | 1425                         |
| 14    | 98438_f_at     | X16202   | NM_010394     | NP_034524      | 1018                         | 1425                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 15    | none           |          |               |                |                              |                              |
| 15    | 101723_r_at    | U06146   | -             | AAA18425       | 1019                         | 1426                         |
| 15    | 103024_at      | X13335   | NM_007403     | NP_031429      | 1020                         | 1427                         |
| 15    | 92917_at       | L36244   | NM_010810     | NP_034940      | 1021                         | 1428                         |
| 15    | 114151_at      | AJ426250 | NM_010810     | NP_034940      | 1021                         | 1428                         |
| 15    | 162318_r_at    | AV069212 | NM_010810     | NP_034940      | 1021                         | 1428                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 16    | 166806_at      | A1835337 | NM_019967     | NP_064351      | 1022                         | 1429                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 17    | 112883_at      | A1835478 | -             | -              | 1023                         | -                            |
| 17    | 100567_at      | M20497   | NM_024406     | NP_077717      | 1024                         | 1430                         |
| 17    | 97912_at       | A1843488 | NM_019793     | NP_062767      | 1025                         | 1431                         |
| 17    | 101429_at      | X67083   | NM_007837     | NP_031863      | 1026                         | 1432                         |
| 17    | 97647_at       | M11408   | NM_013647     | NP_038675      | 1027                         | 1433                         |
| 17    | 169860_r_at    | M11408   | NM_013647     | NP_038675      | 1027                         | 1433                         |
| 17    | 169362_f_at    | AV069368 | NM_023137     | NP_075626      | 1028                         | 1434                         |
| 17    | 92715_at       | AV069368 | NM_023137     | NP_075626      | 1028                         | 1434                         |
| 17    | 168938_r_at    | AV069368 | NM_023137     | NP_075626      | 1028                         | 1434                         |
| 17    | 112237_at      | A1115916 | NM_026228     | NP_080504      | 1029                         | 1435                         |
| 17    | 97442_at       | A1115916 | NM_026228     | NP_080504      | 1029                         | 1435                         |
| 27    | 110839_at      | A1839647 | -             | -              |                              |                              |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 19    | 162702_at      | A1851272 | NM_019819     | NP_062793      | 1030                         | 1436                         |

Table 88

|    |             |          |           |           |      |      |
|----|-------------|----------|-----------|-----------|------|------|
| 19 | 165144_r_at | AV357704 | NM_019819 | NP_062793 | 1030 | 1436 |
| 19 | 171285_at   | AV216631 | NM_019819 | NP_062793 | 1030 | 1436 |
| 19 | 162543_r_at | AV248562 | NM_007388 | NP_031414 | 1031 | 1437 |
| 19 | 98859_at    | M99054   | NM_007388 | NP_031414 | 1031 | 1437 |

| mouse |                   |         |                  |                   |                                 |                                 |
|-------|-------------------|---------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(nucleotide seq.) |
| 20    | 92832_at          | U88325  | NM_009896        | NP_034026         | 1032                            | 1438                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(nucleotide seq.) |
| 21    | 101019_at         | U74683   | NM_009982        | NP_034112         | 1033                            | 1439                            |
| 21    | 161251_f_at       | AV316554 | NM_009982        | NP_034112         | 1033                            | 1439                            |
| 21    | 101020_at         | A1842657 | NM_009982        | NP_034112         | 1033                            | 1439                            |
| 21    | none              |          |                  |                   |                                 |                                 |
| 21    | -                 | AA798057 | -                | -                 | 1034                            | -                               |
| 21    | 93303_at          | U64445   | NM_011672        | NP_035802         | 1035                            | 1440                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(nucleotide seq.) |
| 22    | -                 | AF063937 | NM_009126        | NP_033152         | 1036                            | 1441                            |
| 22    | 108524_at         | U64445   | NM_011672        | NP_035802         | 1037                            | 1442                            |
| 22    | 108524_at         | U64445   | NM_011672        | NP_035802         | 1037                            | 1442                            |
| 22    | 96060_at          | U25844   | NM_009254        | NP_033280         | 1038                            | 1443                            |
| 22    | 113899_at         | AW121899 | NM_007840        | NP_031866         | 1039                            | 1444                            |
| 22    | 93493_at          | X65627   | NM_007840        | NP_031866         | 1039                            | 1444                            |
| 22    | 137166_r_at       | A1327311 | NM_011111        | NP_035241         | 1040                            | 1445                            |
| 22    | 92978_s_at        | X16490   | NM_011111        | NP_035241         | 1040                            | 1445                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(nucleotide seq.) |
| 24    | 163453_at         | A1596769 | -                | -                 | 1041                            | -                               |
| 24    | 166475_r_at       | AV146353 | -                | -                 | 1042                            | -                               |
| 24    | 98307_at          | AF106070 | NM_011246        | NP_035376         | 1043                            | 1446                            |
| 24    | 167498_l_at       | AV313063 | NM_011246        | NP_035376         | 1043                            | 1446                            |
| 24    | 98417_at          | M21038   | NM_010846        | NP_034976         | 1044                            | 1447                            |
| 24    | 103911_at         | AB012693 | NM_010561        | NP_034711         | 1045                            | 1448                            |
| 24    | 102699_at         | J03368   | NM_013606        | NP_038634         | 1046                            | 1449                            |
| 24    | 98417_at          | M21038   | NM_010846        | NP_034976         | 1044                            | 1447                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(nucleotide seq.) |
| 25    | -                 | A1427122 | -                | -                 | 1047                            | -                               |

Table 89

|    |             |          |           |           |      |      |
|----|-------------|----------|-----------|-----------|------|------|
| 25 | 164428_i_at | AV085754 | NM_008470 | NP_032496 | 1048 | 1450 |
| 25 | 103589_at   | AF053235 | NM_008470 | NP_032496 | 1048 | 1450 |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 26    | 101465_at         | U06924   | NM_009283        | NP_033309         | 1049                            | 1451                            |
| 26    | 114635_at         | AA960121 | NM_009283        | NP_033309         | 1049                            | 1451                            |
| 26    | 101465_at         | U06924   | NM_009283        | NP_033309         | 1049                            | 1451                            |
| 26    | 114635_at         | AA960121 | NM_009283        | NP_033309         | 1049                            | 1451                            |
| 26    | 101465_at         | U06924   | NM_009283        | NP_033309         | 1049                            | 1451                            |
| 26    | 101465_at         | U06924   | NM_009283        | NP_033309         | 1049                            | 1451                            |
| 26    | 93281_at          | AF049125 | NM_011992        | NP_036122         | 1050                            | 1452                            |
| 26    | 109154_at         | AW121894 | -                | -                 | 1051                            | -                               |
| 26    | -                 | AK005232 | NM_027213        | NP_081489         | 1052                            | 1453                            |
| 26    | -                 | U73037   | NM_016850        | NP_058546         | 1053                            | 1454                            |
| 26    | 164758_i_at       | AV222614 | NM_017373        | NP_059069         | 1054                            | 1455                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 27    | -                 | AF167411 | NM_011867        | NP_035997         | 1055                            | 1456                            |
| 27    | 102326_at         | AB002664 | NM_010877        | NP_035007         | 1056                            | 1457                            |
| 27    | 110839_at         | AI839647 | -                | -                 | 1057                            | -                               |

Table 90

| mouse |                |         |               |                |                              |                              |
|-------|----------------|---------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 2     | none           |         |               |                |                              |                              |
| 2     | 101730_at      | D82029  | NM_007666     | P_031692       | 1058                         | 1458                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 4     | 160598_at      | AW050048 | NM_025397     | NP_079673      | 1059                         | 1459                         |
| 4     | 163760_at      | AW122515 | NM_023158     | NP_075647      | 1060                         | 1460                         |
| 4     | 134771_at      | AI060877 | NM_023158     | NP_075647      | 1060                         | 1460                         |
| 4     | 165377_r_at    | AV062836 | NM_023158     | NP_075647      | 1060                         | 1460                         |

| mouse |                |         |               |                |                              |                              |
|-------|----------------|---------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 5     | none           |         |               |                |                              |                              |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 6     | 103471_at      | AI194333 | NM_025706     | NP_079982      | 1061                         | 1461                         |
| 6     | 101955_at      | AJ002387 | NM_022310     | NP_071705      | 1062                         | 1462                         |
| 6     | 162445_at      | AV351546 | NM_022310     | NP_071705      | 1062                         | 1462                         |

| mouse |                |           |               |                |                              |                              |
|-------|----------------|-----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank   | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 7     | 167028_at      | AI841650  | NM_021890     | NP_068690      | 1063                         | 1463                         |
| 7     | 168721_r_at    | AV235789  | NM_021890     | NP_068690      | 1063                         | 1463                         |
| 7     | 104420_at      | U43428    | NM_010927     | NP_035057      | 1064                         | 1464                         |
| 7     | 103446_at      | AAA959954 | NM_027835     | NP_082111      | 1065                         | 1465                         |
| 7     | 99394_at       | U86408    | NM_008217     | NP_032243      | 1066                         | 1466                         |
| 7     | 108048_at      | AI835268  | -             | -              | 1067                         | -                            |
| 7     | none           |           |               |                |                              |                              |
| 7     | 110639_at      | AW108146  | -             | -              | 1068                         | -                            |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 8     | 107112_at      | AI121797 | -             | -              | 1069                         | -                            |
| 8     | 107112_at      | AI121797 | -             | -              | 1069                         | -                            |
| 8     | 118662_at      | AI843057 | -             | -              | 1070                         | -                            |
| 8     | 163364_at      | AA472475 | -             | -              | 1071                         | -                            |
| 8     | 168478_s_at    | AV366153 | -             | -              | 1072                         | -                            |
| 8     | -              | BE687722 | -             | -              | 1073                         | -                            |
| 8     | none           |          |               |                |                              |                              |
| 8     | -              | AK020110 | NM_029959     | NP_084275      | 1074                         | 1467                         |
| 8     | 113253_r_at    | AI852111 | -             | -              | 1075                         | -                            |

Table 91

|    |             |          |           |           |      |      |
|----|-------------|----------|-----------|-----------|------|------|
| 8  | 173461_i.at | AV209883 | -         | -         | 1076 | -    |
| 8  | 115732_at   | AI530075 | -         | -         | 1077 | -    |
| 14 | none        |          |           |           |      |      |
| 8  | 106644_at   | AW047110 | NM_009370 | NP_033396 | 1078 | -    |
| 8  | 92427_at    | D25540   | NM_009370 | NP_033396 | 1078 | -    |
| 8  | none        |          |           |           |      |      |
| 8  | none        |          |           |           |      |      |
| 8  | none        |          |           |           |      |      |
| 8  | 106644_at   | AW047110 | NM_009370 | NP_033396 | 1078 | 1468 |
| 8  | 92427_at    | D25540   | NM_009370 | NP_033396 | 1078 | 1468 |
| 8  | 102907_at   | AW125043 | -         | -         | 1079 | -    |
| 8  | 106644_at   | AW047110 | NM_009370 | NP_033396 | 1078 | -    |
| 8  | 92427_at    | D25540   | NM_009370 | NP_033396 | 1078 | -    |
| 8  | none        |          |           |           |      |      |
| 8  | 114794_at   | AA693185 | -         | -         | 1080 | -    |
| 8  | none        |          |           |           |      |      |
| 8  | 92971_at    | AW125649 | -         | -         | 1081 | -    |
| 8  | 102907_at   | AW125043 | -         | -         | 1079 | -    |
| 8  | 114119_at   | AW124823 | -         | -         | 1082 | -    |
| 8  | 112671_at   | AW122101 | -         | -         | 1083 | -    |
| 8  | 112671_at   | AW122131 | -         | -         | 1083 | -    |
| 8  | none        |          |           |           |      |      |
| 8  | none        |          |           |           |      |      |
| 8  | none        |          |           |           |      |      |

| mouse |                |         |               |                |                              |                              |
|-------|----------------|---------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 9     | none           |         |               |                |                              |                              |
| 9     | 95974_at       | M55544  | NM_010259     | NP_034389      | 1084                         | 1469                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 10    | 101435_at      | AF033275 | NM_008648     | NP_033779      | 1085                         | 1470                         |
| 10    | AA060013       | -        | -             | -              | 1086                         | -                            |
| 10    | 103839_at      | AF064748 | NM_011451     | NP_035581      | 1087                         | 1471                         |
| 10    | 164777_i.at    | AV250525 | NM_011451     | NP_035581      | 1087                         | 1471                         |
| 10    | 162448_f.at    | AV354094 | NM_030704     | NP_109629      | 1088                         | 1472                         |
| 10    | 160139_at      | AB48793  | NM_030704     | NP_109629      | 1088                         | 1472                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 12    | 160415_at      | AI604314 | NM_016674     | NP_057883      | 1089                         | 1473                         |
| 12    | 97546_at       | AF072127 | NM_016674     | NP_057883      | 1089                         | 1473                         |
| 12    | 99934_at       | M80206   | NM_008990     | NP_033016      | 1090                         | 1474                         |
| 12    | 164850_f.at    | AV359774 | NM_008990     | NP_033016      | 1090                         | 1474                         |



Table 92

|    |           |          |           |           |      |      |
|----|-----------|----------|-----------|-----------|------|------|
| 12 | 99933_at  | D26107   | NM_008990 | NP_033016 | 1090 | 1474 |
| 12 | 108811_at | AA981032 | -         | -         | 1091 | -    |
| 12 | 170500_at | AV223427 | -         | -         | 1092 | -    |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 16    | 163337_at      | AA727483 | -             | -              | 1093                         | -                            |
| 16    | 109021_at      | AW214142 | NM_030253     | NP_084529      | 1094                         | 1475                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 17    | 109915_at      | AA170761 | NM_018851     | NP_061339      | 1095                         | 1476                         |
| 17    | 103080_at      | U15635   | NM_018851     | NP_061339      | 1095                         | 1476                         |
| 17    | AW742692       | -        | -             | -              | 1096                         | -                            |
| 17    | 166458_at      | A1431004 | NM_025872     | NP_080148      | 1097                         | 1477                         |
| 17    | 107906_at      | A1316570 | NM_025872     | NP_080148      | 1097                         | 1477                         |
| 17    | 165304_at      | AV245062 | NM_138741     | NP_620080      | 1098                         | 1478                         |
| 17    | 160373_i_at    | A1839175 | NM_138741     | NP_620080      | 1098                         | 1478                         |
| 17    | 111260_at      | A1843809 | -             | -              | 1099                         | -                            |
| 17    | 166340_at      | AA793551 | -             | -              | 1100                         | -                            |
| 17    | 165319_at      | AV270997 | NM_016736     | NP_058016      | 1101                         | 1479                         |
| 17    | 168781_at      | AV253801 | NM_020622     | NP_065647      | 1102                         | 1480                         |
| 17    | 161590_f_at    | AV314829 | NM_016736     | NP_058016      | 1101                         | 1479                         |
| 17    | 100570_at      | U27462   | NM_016736     | NP_058016      | 1101                         | 1479                         |
| 17    | none           |          |               |                |                              |                              |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 18    | 104550_at      | AW123273 | NM_028775     | NP_083051      | 1103                         | 1481                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 20    | 92832_at       | U88325   | NM_009896     | NP_034026      | 1104                         | 1482                         |
| 20    | 93281_at       | AF049125 | NM_011992     | NP_026122      | 1105                         | 1483                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 21    | 95024_at       | AW047653 | NM_011909     | NP_036039      | 1106                         | 1484                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 24    | 162383_r_at    | AV248632 | NM_009895     | NP_034025      | 1107                         | 1485                         |
| 24    | 100022_at      | D89613   | NM_009895     | NP_034025      | 1107                         | 1485                         |
| 24    | 115396_at      | AW212285 | NM_020578     | NP_065603      | 1108                         | 1486                         |

Table 93

|    |             |          |           |           |      |      |
|----|-------------|----------|-----------|-----------|------|------|
| 24 | 163326_i_at | AI616268 | NM_027178 | NP_081454 | 1109 | 1487 |
|----|-------------|----------|-----------|-----------|------|------|

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 25    | 163157_at      | AI606261 | NM_033373     | NP_203537      | 1110                         | 1488                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 26    | -              | -        | NM_016850     | NP_058548      | 1111                         | 1489                         |
| 26    | 161185_i_at    | AV235936 | NM_010637     | NP_034767      | 1112                         | 1490                         |
| 26    | 99622_at       | U20344   | NM_010637     | NP_034767      | 1112                         | 1490                         |

| mouse |                |          |               |                |      |   |
|-------|----------------|----------|---------------|----------------|------|---|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP |      |   |
|       | none           |          |               |                |      |   |
|       | none           |          |               |                |      |   |
|       | none           |          |               |                |      |   |
|       | 161081_at      | AA733664 | -             | -              | 1113 | - |
|       | none           |          |               |                |      |   |
|       | none           |          |               |                |      |   |
|       | none           |          |               |                |      |   |
|       | none           |          |               |                |      |   |
|       | 95020_at       | AI848968 | -             | -              | 1114 | - |
|       | none           |          |               |                |      |   |

Table 94

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 3     | 101469_at      | AF009366 | NM_017464     | NP_059492      | 1115                         | 1491                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 5     | 162345_i_at    | AV173028 | NM_019959     | NP_064343      | 1116                         | 1492                         |
| 5     | 162365_i_at    | AV231477 | NM_019959     | NP_064343      | 1116                         | 1492                         |
| 5     | 161549_f_at    | AV246051 | NM_019959     | NP_064343      | 1116                         | 1492                         |
| 5     | 103676_at      | AI551306 | NM_019959     | NP_064343      | 1116                         | 1492                         |
| 5     | 162487_f_at    | AV122373 | NM_019959     | NP_064343      | 1116                         | 1492                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 7     | -              | AF338440 | NM_053083     | NP_444313      | 1117                         | 1493                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 8     | none           |          |               |                |                              |                              |
| 8     | 114164_at      | AW214638 | -             | -              | 1118                         | -                            |
| 8     | none           |          |               |                |                              |                              |
| 8     | 110625_at      | AI591648 | -             | -              | 1119                         | -                            |
| 8     | 105356_at      | AI607408 | -             | -              | 1120                         | -                            |
| 8     | 112743_at      | AI157595 | -             | -              | 1121                         | -                            |
| 8     | 112061_at      | AI465433 | -             | -              | 1122                         | -                            |
| 8     | 133797_at      | AI118550 | NM_139065     | NP_620704      | 1123                         | 1494                         |
| 8     | 112296_at      | AA759831 | NM_139065     | NP_620704      | 1123                         | 1494                         |
| 8     | 111841_at      | AI527858 | -             | -              | 1124                         | -                            |
| 8     | 133349_at      | AI037551 | -             | -              | 1125                         | -                            |
| 8     | 102965_at      | AW121646 | -             | -              | 1126                         | -                            |
| 8     | 112671_at      | AW122101 | -             | -              | 1127                         | -                            |

| mouse |                |         |               |                |                              |                              |
|-------|----------------|---------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 9     | none           |         |               |                |                              |                              |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 12    | 92626_at       | X57209   | NM_008721     | NP_032747      | 1128                         | 1495                         |
| 12    | 96935_at       | AW011791 | NM_026018     | NP_080294      | 1129                         | 1496                         |
| 12    | 162531_at      | AW048375 | -             | -              | 1130                         | -                            |
| 12    | 96935_at       | AW011791 | NM_026018     | NP_080294      | 1129                         | 1496                         |
| 12    | 162531_at      | AW048375 | -             | -              | 1130                         | -                            |

Table 95

| mouse |                   |         |                  |                   |                                 |                                 |
|-------|-------------------|---------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 14    | none              |         |                  |                   |                                 |                                 |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 16    | 107575_at         | AA980835 | -                | -                 | 1131                            | -                               |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 17    | 169317_at         | AV044941 | NM_022028        | NP_071311         | 1132                            | 1497                            |
| 17    | 111119_at         | AA764217 | NM_022028        | NP_071311         | 1132                            | 1497                            |
| 17    | 111162_f_at       | AA014158 | NM_022028        | NP_071311         | 1132                            | 1497                            |
| 17    | 114337_at         | AW122502 | NM_022028        | NP_071311         | 1132                            | 1497                            |
| 17    | 112893_at         | A1842196 | NM_022028        | NP_071311         | 1132                            | 1497                            |
| 17    | 169317_at         | AV044941 | NM_022028        | NP_071311         | 1132                            | 1497                            |
| 17    | 111119_at         | AA764217 | NM_022028        | NP_071311         | 1132                            | 1497                            |
| 17    | 111162_f_at       | AA014158 | NM_022028        | NP_071311         | 1132                            | 1497                            |
| 17    | 114337_at         | AW122502 | NM_022028        | NP_071311         | 1132                            | 1497                            |
| 17    | 112893_at         | A1842196 | NM_022028        | NP_071311         | 1132                            | 1497                            |
| 17    | 115316_at         | A1550677 | -                | -                 | 1133                            | -                               |
| 17    | 168371_f_at       | AV254276 | -                | -                 | 1134                            | -                               |
| 17    | 106262_at         | AA914186 | -                | -                 | 1135                            | -                               |
| 17    | 168490_at         | A1662368 | -                | -                 | 1136                            | -                               |
| 17    | none              |          |                  |                   |                                 |                                 |
| 17    | 114263_at         | AW121271 | -                | -                 | 1137                            | -                               |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 21    | 109965_s_at       | AA588946 | NM_015775        | NP_056590         | 1138                            | 1498                            |
| 21    | 131180_at         | A1607826 | NM_015775        | NP_056590         | 1138                            | 1498                            |
| 21    | 164520_f_at       | AV302474 | NM_015775        | NP_056590         | 1138                            | 1498                            |
| 21    | 101019_at         | U74683   | NM_009982        | NP_034112         | 1139                            | 1499                            |
| 21    | 161251_f_at       | AV316954 | NM_009982        | NP_034112         | 1139                            | 1499                            |
| 21    | 101020_at         | A1842667 | NM_009982        | NP_034112         | 1139                            | 1499                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 24    | -                 | AF233517 | NM_021893        | NP_068693         | 1140                            | 1500                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 25    | 163157_at         | A1606261 | NM_033373        | NP_203537         | 1141                            | 1501                            |
| 25    | 129268_at         | AW122522 | -                | -                 | 1142                            | -                               |

Table 96

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|       | 103066_at         | L32973   | NM_020557        | NP_065582         | 1143                            | 1502                            |
|       | 161186_f.at       | AV246064 | NM_020557        | NP_065582         | 1143                            | 1502                            |
|       | none              |          |                  |                   |                                 |                                 |
|       | none              |          |                  |                   |                                 |                                 |
|       | none              |          |                  |                   |                                 |                                 |
|       | none              |          |                  |                   |                                 |                                 |
|       | none              |          |                  |                   |                                 |                                 |

Table 97

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 7     | 102741_at         | AW046250 | NM_019655        | NP_062629         | 1144                            | 1503                            |
| 7     | 96188_at          | AF052506 | NM_019655        | NP_062629         | 1144                            | 1503                            |
| 7     | none              |          |                  |                   |                                 |                                 |

| mouse |                   |         |                  |                   |                                 |                                 |
|-------|-------------------|---------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 8     | none              |         |                  |                   |                                 |                                 |
| 8     | none              |         |                  |                   |                                 |                                 |
| 8     | none              |         |                  |                   |                                 |                                 |
| 8     | none              |         |                  |                   |                                 |                                 |

| mouse |                   |         |                  |                   |                                 |                                 |
|-------|-------------------|---------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 9     | none              |         |                  |                   |                                 |                                 |

| mouse |                   |         |                  |                   |                                 |                                 |
|-------|-------------------|---------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 24    | 102699_at         | J03368  | NM_013606        | NP_038634         | 1145                            | 1504                            |
| 24    | 98417_at          | M21038  | NM_010846        | NP_034976         | 1146                            | 1505                            |

| mouse |                   |         |                  |                   |                                 |                                 |
|-------|-------------------|---------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|       | none              |         |                  |                   |                                 |                                 |
|       | none              |         |                  |                   |                                 |                                 |
|       | none              |         |                  |                   |                                 |                                 |
|       | none              |         |                  |                   |                                 |                                 |
|       | none              |         |                  |                   |                                 |                                 |

Table 98

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 2     | 134663_at         | A1592213 | -                | -                 | 1147                            | -                               |
| 2     | 110160_at         | A1510217 | -                | -                 | 1148                            | -                               |

| mouse |                   |         |                  |                   |                                 |                                 |
|-------|-------------------|---------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 4     | none              |         |                  |                   |                                 |                                 |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 7     | -                 | U42443   | NM_007532        | NP_031558         | 1149                            | 1506                            |
| 7     | -                 | U42443   | NM_007533        | NP_031558         | 1150                            | 1506                            |
| 7     | none              |          |                  |                   |                                 |                                 |
| 7     | 132809_at         | AA762195 | -                | -                 | 1151                            | -                               |
| 7     | none              |          |                  |                   |                                 |                                 |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 8     | 92909_at          | X80171   | NM_008827        | NP_032853         | 1152                            | 1507                            |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | 102907_at         | AW125043 | -                | -                 | 1153                            | -                               |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | 110028_at         | AW124261 | -                | -                 | 1154                            | -                               |
| 8     | 112808_at         | A1853680 | -                | -                 | 1155                            | -                               |
| 8     | 116098_at         | A1646866 | -                | -                 | 1156                            | -                               |
| 8     | 107796_at         | AW261774 | -                | -                 | 1157                            | -                               |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | 161376_f.at       | AV243059 | NM_133349        | NP_579927         | 1158                            | 1508                            |
| 8     | 160713_at         | A1841579 | NM_133349        | NP_579927         | 1158                            | 1508                            |
| 8     | 167609_r.at       | AW121990 | -                | -                 | 1159                            | -                               |
| 8     | 94233_at          | AW048642 | NM_054069        | NP_473440         | 1160                            | 1509                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 9     | 109385_at         | A1315194 | NM_021384        | NP_067359         | 1161                            | 1510                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 12    | 160415_at         | A1604314 | NM_016674        | NP_057883         | 1162                            | 1511                            |
| 12    | 97546_at          | AF072127 | NM_016674        | NP_057883         | 1162                            | 1511                            |
| 12    | none              |          |                  |                   |                                 |                                 |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 16    | 109021_at         | AW214142 | NM_030253        | NP_084529         | 1163                            | 1512                            |
| 16    | 163337_at         | AA727483 | -                | -                 | 1164                            | -                               |

Table 99

|    |           |          |   |   |      |   |
|----|-----------|----------|---|---|------|---|
| 16 | 163337_at | AA727483 | - | - | 1164 | - |
|----|-----------|----------|---|---|------|---|

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 17    | 162006_r_at    | AV334115 | -             | -              | 1165                         | -                            |
| 17    | 100589_at      | AW047808 | -             | -              | 1166                         | -                            |
| 17    | 133126_at      | AW107849 | -             | -              | 1167                         | -                            |
| 17    | 102243_at      | AF035527 | NM_007914     | NP_031940      | 1168                         | 1513                         |
| 17    | 114753_at      | AW215423 | NM_007914     | NP_031940      | 1168                         | 1513                         |
| 17    | 110963_at      | AI527695 | NM_007914     | NP_031940      | 1168                         | 1513                         |
| 17    | 114753_at      | AF035527 | NM_007914     | NP_031940      | 1168                         | 1513                         |
| 17    | 102243_at      | AW215423 | NM_007914     | NP_031940      | 1168                         | 1513                         |
| 17    | 110963_at      | AI527695 | NM_007914     | NP_031940      | 1168                         | 1513                         |
| 17    | 108958_at      | AI851818 | -             | -              | 1169                         | -                            |
| 17    | 93342_at       | AI852665 | -             | -              | 1170                         | -                            |
| 17    | 92389_at       | AB025411 | NM_011856     | NP_035986      | 1171                         | 1514                         |
| 17    | 133154_at      | AW125558 | -             | -              | 1172                         | -                            |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 20    | 135407_at      | AW226597 | -             | -              | 1173                         | -                            |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 24    | -              | AF268195 | NM_030732     | NP_109657      | 1174                         | 1515                         |

| mouse |                |         |               |                |                              |                              |
|-------|----------------|---------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 27    | none           |         |               |                |                              |                              |
| 27    | none           |         |               |                |                              |                              |

| mouse |                |         |               |                |                              |                              |
|-------|----------------|---------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|       | none           |         |               |                |                              |                              |

Table 100

| cat# | mouse          |         |               |                |                              |                              |
|------|----------------|---------|---------------|----------------|------------------------------|------------------------------|
|      | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 1    | 99669_at       | X15986  | NM_008495     | NP_032521      | 1175                         | 1516                         |

| cat# | mouse          |          |               |                |                              |                              |
|------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
|      | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 2    | none           |          |               |                |                              |                              |
| 2    | 161239_r_at    | AV281386 | NM_007697     | NP_031723      | 1176                         | 1517                         |
| 2    | 103088_at      | X94310   | NM_007697     | NP_031723      | 1176                         | 1517                         |
| 2    | 167319_i_at    | AV283855 | NM_007697     | NP_031723      | 1176                         | 1517                         |
| 2    | 169984_i_at    | AV278112 | NM_007697     | NP_031723      | 1176                         | 1517                         |
| 2    | -              | A46528   | -             | -              | 1177                         | -                            |
| 2    | 100019_at      | D45889   | NM_019389     | NP_062262      | 1178                         | 1518                         |
| 2    | 161370_f_at    | AV239731 | NM_011519     | NP_035649      | 1179                         | 1519                         |
| 2    | 96033_at       | Z22532   | NM_011519     | NP_035649      | 1179                         | 1519                         |
| 2    | 165372_at      | AV056802 | -             | -              | 1180                         | -                            |

| cat# | mouse          |          |               |                |                              |                              |
|------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
|      | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 4    | 164885_f_at    | AV335220 | NM_009142     | NP_033168      | 1181                         | 1520                         |
| 4    | 98008_at       | U92565   | NM_009142     | NP_033168      | 1181                         | 1520                         |
| 4    | 161752_r_at    | AV290053 | NM_009142     | NP_033168      | 1181                         | 1520                         |

| cat# | mouse          |          |               |                |                              |                              |
|------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
|      | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 5    | 161157_r_at    | AV231282 | NM_009369     | NP_033395      | 1182                         | 1521                         |
| 5    | 92877_at       | L19932   | NM_009369     | NP_033395      | 1182                         | 1521                         |
| 5    | 160489_at      | L24118   | NM_009369     | NP_033395      | 1182                         | 1521                         |

| cat# | mouse          |          |               |                |                              |                              |
|------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
|      | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 6    | 161593_r_at    | AV291690 | -             | -              | 1183                         | -                            |
| 6    | 103242_at      | AW123834 | NM_009677     | NP_033807      | 1184                         | 1522                         |
| 6    | 82288_at       | X54424   | NM_009677     | NP_033807      | 1184                         | 1522                         |
| 6    | none           |          |               |                |                              |                              |

| cat# | mouse          |          |               |                |                              |                              |
|------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
|      | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 7    | none           |          |               |                |                              |                              |
| 7    | 94906_at       | M22679   | NM_007409     | NP_031435      | 1185                         | 1523                         |
| 7    | 106011_at      | AW261476 | NM_018881     | NP_061369      | 1185                         | 1524                         |
| 7    | 165790_at      | AA681923 | NM_019984     | NP_064368      | 1187                         | 1525                         |
| 7    | 94908_at       | M22679   | NM_007409     | NP_031435      | 1185                         | 1523                         |



Table 101

|   |             |          |           |           |      |      |
|---|-------------|----------|-----------|-----------|------|------|
| 7 | 103905_at   | AI314558 | -         | -         | 1188 | -    |
| 7 | none        |          |           |           |      |      |
| 7 | 164478_r_at | AV245818 | NM_133198 | NP_573461 | 1189 | 1526 |
| 7 | 110291_at   | AI256150 | NM_133198 | NP_573461 | 1189 | 1526 |
| 7 | none        |          |           |           |      |      |
| 7 | 162221_i_at | AV112892 | -         | -         | 1190 | -    |
| 7 | 94842_at    | AI853830 | -         | -         | 1191 | -    |
| 7 | 162179_r_at | AV367224 | -         | -         | 1192 | -    |
| 7 | none        |          |           |           |      |      |
| 7 | 160937_at   | AF039391 | NM_016669 | NP_057878 | 1193 | 1527 |
| 7 | 166000_at   | AV248813 | NM_016669 | NP_057878 | 1193 | 1527 |
| 7 | 101587_at   | U89419   | NM_010145 | NP_034275 | 1194 | 1528 |
| 7 | 92851_at    | U49430   | NM_007752 | NP_031778 | 1195 | 1529 |
| 7 | 93688_at    | D21825   | NM_007717 | NP_031743 | 1196 | 1530 |
| 7 | 94507_at    | U15977   | NM_007981 | NP_032007 | 1197 | 1531 |
| 7 | 117284_at   | AI848384 | NM_008131 | NP_032157 | 1198 | 1532 |
| 7 | 99498_at    | M60803   | NM_008131 | NP_032157 | 1198 | 1532 |
| 7 | 94852_at    | U09114   | NM_008131 | NP_032157 | 1198 | 1532 |
| 7 | 161826_r_at | AV381947 | NM_008131 | NP_032157 | 1198 | 1532 |
| 7 | 101991_at   | D16213   | NM_010231 | NP_034361 | 1199 | 1533 |
| 7 | 104421_at   | U87147   | NM_008030 | NP_032056 | 1200 | 1534 |
| 7 | 168706_r_at | AV225591 | NM_008161 | NP_032187 | 1201 | 1535 |
| 7 | 101676_at   | U13705   | NM_008161 | NP_032187 | 1201 | 1535 |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 8     | 113969_at      | AW208826 | -             | -              | 1202                         | -                            |
| 8     | none           |          |               |                |                              |                              |
| 8     | 135495_r_at    | AV242700 | -             | -              | 1203                         | -                            |
| 8     | 162919_at      | AI227478 | -             | -              | 1204                         | -                            |
| 8     | 112372_at      | AW230421 | -             | -              | 1205                         | -                            |
| 8     | 108490_at      | AI463227 | -             | -              | 1206                         | -                            |
| 8     | 94418_at       | AI839004 | NM_130450     | NP_569717      | 1207                         | 1536                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 10    | 169261_at      | AV298003 | NM_023580     | NP_076068      | 1208                         | 1537                         |
| 10    | 100143_at      | Y07711   | NM_011777     | NP_035907      | 1209                         | 1538                         |
| 10    | 103451_at      | AI835159 | -             | -              | 1210                         | -                            |
| 10    | 169902_at      | AV214820 | -             | -              | 1211                         | -                            |
| 10    | 167168_f_at    | AV127592 | -             | -              | 1212                         | -                            |
| 10    | 160067_at      | AW125329 | -             | -              | 1213                         | -                            |

Table 102

|    |             |          |           |           |      |      |
|----|-------------|----------|-----------|-----------|------|------|
| 10 | 93422_at    | U62391   | NM_011074 | NP_035204 | 1214 | 1539 |
| 10 | 93421_at    | AF033655 | NM_011074 | NP_035204 | 1214 | 1539 |
| 10 | 168913_r_at | AV347594 | NM_011074 | NP_035204 | 1214 | 1539 |
| 10 | 167725_f_at | A3847882 | NM_011074 | NP_035204 | 1214 | 1539 |
| 10 | 113152_at   | A1850672 | NM_016866 | NP_058562 | 1215 | 1540 |
| 10 | 160805_at   | AF099988 | NM_016866 | NP_058562 | 1215 | 1540 |

| cat# | mouse             |          |                  |                   |                                 |                                 |
|------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
|      | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 11   | 96947_at          | AW046273 | -                | -                 | 1216                            | -                               |
| 11   | 162144_at         | AV351508 | -                | -                 | 1217                            | -                               |
| 11   | 107600_at         | A1838753 | -                | -                 | 1218                            | -                               |
| 11   | 98054_at          | L33416   | NM_007899        | NP_031925         | 1219                            | 1541                            |
| 11   | 170917_r_at       | AV092620 | NM_007899        | NP_031925         | 1219                            | 1541                            |
| 11   | 160641_at         | A1021573 | NM_133232        | NP_573495         | 1220                            | 1542                            |
| 11   | 103577_at         | A1326331 | NM_133232        | NP_573495         | 1220                            | 1542                            |

| cat# | mouse             |          |                  |                   |                                 |                                 |
|------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
|      | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 12   | 116451_at         | AA615200 | -                | -                 | 1221                            | -                               |
| 12   | 116451_at         | AA615200 | -                | -                 | 1221                            | -                               |
| 12   | none              |          |                  |                   |                                 |                                 |
| 12   | 160508_at         | AW209486 | -                | -                 | 1222                            | -                               |
| 12   | -                 | AH009304 | NM_017369        | NP_059065         | 1223                            | 1543                            |
| 12   | 93430_at          | AF000236 | NM_007722        | NP_031748         | 1224                            | 1544                            |
| 12   | 99915_at          | L41352   | NM_009704        | NP_033834         | 1225                            | 1545                            |
| 12   | 96339_at          | AW046363 | NM_053257        | NP_444487         | 1226                            | 1546                            |
| 12   | 167252_at         | AV106158 | NM_053257        | NP_444487         | 1226                            | 1546                            |
| 12   | 164621_l_at       | AV157335 | NM_053257        | NP_444487         | 1226                            | 1546                            |
| 12   | 108822_at         | A1515758 | NM_053110        | NP_444340         | 1227                            | 1547                            |
| 12   | 168624_at         | AV223501 | NM_053110        | NP_444340         | 1227                            | 1547                            |
| 12   | 92956_at          | X74760   | NM_008716        | NP_032742         | 1228                            | 1548                            |
| 12   | 98387_at          | L26047   | NM_009747        | NP_033877         | 1229                            | 1549                            |
| 12   | 129282_at         | AW124518 | NM_019571        | NP_062517         | 1230                            | 1550                            |
| 12   | 140325_at         | AW125637 | NM_019571        | NP_062517         | 1230                            | 1550                            |
| 12   | 163391_at         | AW123971 | NM_019571        | NP_062517         | 1230                            | 1550                            |
| 12   | 82426_at          | A1877157 | NM_019571        | NP_062517         | 1230                            | 1550                            |

| cat# | mouse             |          |                  |                   |                                 |                                 |
|------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
|      | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 13   | 92494_at          | AJ238978 | NM_011922        | NP_036052         | 1231                            | 1551                            |

Table 103

|    |           |          |           |           |      |      |
|----|-----------|----------|-----------|-----------|------|------|
| 13 | -         | AJ011800 | NM_010030 | NP_034160 | 1232 | 1552 |
| 13 | 98420_at  | AA919924 | NM_053261 | NP_44449  | 1233 | 1553 |
| 13 | A1805678  | -        | -         | -         | 1234 | -    |
| 13 | 161918_at | AV380611 | NM_009731 | NP_033851 | 1235 | 1554 |
| 13 | 102826_at | J05663   | NM_009731 | NP_033851 | 1235 | 1554 |
| 13 | 132885_at | A1429094 | -         | -         | 1236 | -    |
| 13 | 160544_at | AJ223066 | NM_010634 | NP_034764 | 1237 | 1555 |
| 13 | 109764_at | A1840194 | NM_010634 | NP_034764 | 1237 | 1555 |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 14    | 100998_at         | M21932   | NM_010379        | NP_034509         | 1238                            | 1556                            |
| 14    | 116266_at         | AW122580 | NM_010382        | NP_034512         | 1239                            | 1557                            |
| 14    | 100998_at         | M21932   | NM_010379        | NP_034509         | 1238                            | 1556                            |
| 14    | 116266_at         | AW122580 | NM_010382        | NP_034512         | 1239                            | 1557                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 15    | 94724_at          | Y13185   | NM_019471        | NP_062344         | 1240                            | 1558                            |
| 15    | 162369_f_at       | AV239570 | NM_013599        | NP_038627         | 1241                            | 1559                            |
| 15    | 99957_at          | X72785   | NM_013599        | NP_038627         | 1241                            | 1559                            |
| 15    | 168521_r_at       | AV231860 | NM_013599        | NP_038627         | 1241                            | 1559                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 16    | 161716_at         | AV252298 | NM_010234        | NP_034364         | 1242                            | 1560                            |
| 16    | 160901_at         | V00727   | NM_010234        | NP_034364         | 1242                            | 1560                            |
| 16    | 167990_at         | AA118615 | -                | -                 | 1243                            | -                               |
| 16    | 161716_at         | AV252298 | NM_010234        | NP_034364         | 1242                            | 1560                            |
| 16    | 160901_at         | V00727   | NM_010234        | NP_034364         | 1242                            | 1560                            |
| 16    | 167990_at         | AA118615 | -                | -                 | 1243                            | -                               |
| 16    | 93506_at          | AW121063 | NM_133668        | NP_598429         | 1244                            | 1561                            |
| 16    | 160464_s_at       | U60593   | NM_101088<br>4   | NP_035014         | 1245                            | 1562                            |
| 16    | 110774_at         | A1832667 | -                | -                 | 1246                            | -                               |
| 16    | 163286_at         | AW122051 | -                | -                 | 1247                            | -                               |
| 16    | 101076_r_at       | AB016592 | NM_011783        | NP_035913         | 1248                            | 1563                            |
| 16    | 101075_f_at       | AB016592 | NM_011783        | NP_035913         | 1248                            | 1563                            |
| 16    | 162200_r_at       | AV062476 | NM_011783        | NP_035913         | 1248                            | 1563                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 17    | 106584_at         | A1152881 | -                | -                 | 1249                            | -                               |

Table 104

|    |             |          |           |           |      |      |
|----|-------------|----------|-----------|-----------|------|------|
| 17 | 171229_i.at | AV167772 | -         | -         | 1250 | -    |
| 17 | none        |          |           |           |      |      |
| 17 | none        |          |           |           |      |      |
| 17 | 162559_at   | AJ837711 | -         | -         | 1251 | -    |
| 17 | 168765_at   | AV245837 | -         | -         | 1252 | -    |
| 17 | 111732_at   | AA881910 | -         | -         | 1253 | -    |
| 17 | 108756_at   | AW945893 | NM_134094 | NP_598855 | 1254 | 1564 |
| 17 | 112376_at   | AW124163 | NM_134094 | NP_598855 | 1254 | 1564 |
| 17 | 140699_at   | AW124014 | -         | -         | 1255 | -    |
| 17 | 103460_at   | A1849939 | -         | -         | 1256 | -    |
| 17 | 163822_at   | AA013823 | NM_133743 | NP_598504 | 1257 | 1565 |
| 17 | 189732_i.at | AV075775 | NM_133743 | NP_598504 | 1257 | 1565 |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 18    | 102701_at      | M21856   | -             | AAA40425       | 1258                         | 1566                         |
| 18    | 102690_at      | AF047529 | NM_007814     | NP_031840      | 1259                         | 1567                         |
| 18    | none           |          |               |                |                              |                              |
| 18    | none           |          |               |                |                              |                              |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 19    | 168611_i.at    | AV215941 | NM_013642     | NP_038670      | 1260                         | 1568                         |
| 19    | 104598_at      | X51940   | NM_013642     | NP_038670      | 1260                         | 1568                         |
| 19    | 92380_r.at     | AJ133130 | NM_011219     | NP_035349      | 1261                         | 1569                         |
| 19    | 169828_f.at    | AV151279 | NM_011219     | NP_035349      | 1261                         | 1569                         |
| 19    | 134749_f.at    | AI662731 | NM_011219     | NP_035349      | 1261                         | 1569                         |
| 19    | 165782_at      | AW120652 | -             | -              | 1262                         | -                            |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 20    | 95083_at       | X81581   | NM_008343     | NP_032369      | 1263                         | 1570                         |
| 20    | 95082_at       | A1842277 | NM_008343     | NP_032369      | 1263                         | 1570                         |
| 20    | 95083_at       | X81581   | NM_008343     | NP_032369      | 1263                         | 1570                         |
| 20    | 95082_at       | A1842277 | NM_008343     | NP_032369      | 1263                         | 1570                         |
| 20    | 103904_at      | X81584   | NM_008344     | NP_032370      | 1264                         | 1571                         |
| 20    | 100715_at      | U89840   | NM_020597     | NP_065622      | 1265                         | 1572                         |

| mouse |                |         |               |                |                              |                              |
|-------|----------------|---------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 21    | none           |         |               |                |                              |                              |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 22    | -              | AK018226 | XM_110043     | XP_110043      | 1266                         | 1573                         |

Table 105

|    |             |          |           |           |      |      |
|----|-------------|----------|-----------|-----------|------|------|
| 22 | 103611_at   | AB012693 | NM_010581 | NP_034711 | 1267 | 1574 |
| 22 | 94147_at    | M33960   | NM_008871 | NP_032897 | 1268 | 1575 |
| 22 | 94147_at    | M33960   | NM_008871 | NP_032897 | 1268 | 1575 |
| 22 | 170241_f_at | AV077498 | NM_009257 | NP_032883 | 1269 | 1576 |
| 22 | 100034_at   | U54705   | NM_009257 | NP_032883 | 1269 | 1576 |
| 22 | 165730_at   | AI646751 | NM_009257 | NP_032883 | 1269 | 1576 |

| mouse |                |          |               |                |                             |                             |
|-------|----------------|----------|---------------|----------------|-----------------------------|-----------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq) | SEQ ID NO: (amino acid seq) |
| 23    | 101634_at      | M33212   | NM_008722     | NP_032748      | 1270                        | 1577                        |
| 23    | 103448_at      | M83218   | NM_013650     | NP_038678      | 1271                        | 1578                        |
| 23    | 165722_r_at    | AV300070 | NM_008722     | NP_032748      | 1272                        | 1577                        |
| 23    | 165723_at      | AV295738 | NM_008722     | NP_032748      | 1272                        | 1577                        |

| mouse |                |          |               |                |                             |                             |
|-------|----------------|----------|---------------|----------------|-----------------------------|-----------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq) | SEQ ID NO: (amino acid seq) |
| 24    | 137179_at      | A1326535 | -             | -              | 1273                        | -                           |
| 24    | 100127_at      | M35523   | -             | AAA37454       | 1274                        | 1579                        |
| 24    | 137179_at      | A1326535 | -             | -              | 1273                        | -                           |
| 24    | 100127_at      | M35523   | -             | AAA37454       | 1274                        | 1579                        |
| 24    | 110236_at      | A1430293 | -             | -              | 1275                        | -                           |
| 24    | 110236_at      | A1430293 | -             | -              | 1275                        | -                           |
| 24    | 165779_i_at    | AW124292 | -             | -              | 1276                        | -                           |
| 24    | 94291_at       | L04503   | NM_011681     | NP_035811      | 1277                        | 1580                        |
| 24    | 109308_at      | A1503500 | -             | -              | 1278                        | -                           |
| 24    | 94712_at       | U73620   | NM_009506     | NP_033532      | 1279                        | 1581                        |
| 24    | 103579_at      | X53247   | NM_009008     | NP_033034      | 1280                        | 1582                        |

| mouse |                |          |               |                |                             |                             |
|-------|----------------|----------|---------------|----------------|-----------------------------|-----------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq) | SEQ ID NO: (amino acid seq) |
| 25    | 101046_at      | X56397   | NM_011701     | NP_035831      | 1281                        | 1583                        |
| 25    | 162379_r_at    | AV245272 | NM_011701     | NP_035831      | 1281                        | 1583                        |
| 25    | 161361_e_at    | AV213431 | NM_011618     | NP_035748      | 1282                        | 1584                        |
| 25    | 101383_at      | AJ131711 | NM_011618     | NP_035748      | 1282                        | 1584                        |
| 25    | 92739_at       | L28819   | NM_008412     | NP_032438      | 1283                        | 1585                        |
| 25    | 113796_at      | AJ314966 | NM_024427     | NP_077745      | 1284                        | 1586                        |
| 25    | 105003_at      | AA939674 | NM_024427     | NP_077745      | 1284                        | 1586                        |
| 25    | 160532_at      | M22479   | NM_024427     | NP_077745      | 1284                        | 1586                        |
| 25    | 113796_at      | AJ314966 | NM_024427     | NP_077745      | 1284                        | 1586                        |
| 25    | 105003_at      | AA939674 | NM_024427     | NP_077745      | 1284                        | 1586                        |
| 25    | 160532_at      | M22479   | NM_024427     | NP_077745      | 1284                        | 1586                        |

Table 106

|    |             |          |           |           |      |      |
|----|-------------|----------|-----------|-----------|------|------|
| 25 | 113796_at   | AI314966 | NM_024427 | NP_077745 | 1284 | 1586 |
| 25 | 105003_at   | AA939674 | NM_024427 | NP_077745 | 1284 | 1586 |
| 25 | 160532_at   | M22479   | NM_024427 | NP_077745 | 1284 | 1586 |
| 25 | 100445_r_at | X91825   | NM_009265 | NP_033291 | 1285 | 1587 |
| 25 | 100445_f_at | X91825   | NM_009265 | NP_033291 | 1285 | 1587 |
| 25 | 164632_l_at | AV225959 | -         | -         | 1286 | -    |
| 25 | 160852_at   | D16313   | NM_008469 | NP_032495 | 1287 | 1588 |
| 25 | 164518_f_at | AV171812 | NM_008469 | NP_032495 | 1287 | 1588 |
| 25 | 163295_at   | AI561819 | NM_025276 | NP_079552 | 1288 | 1589 |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 26    | 98122_at          | AF074600 | NM_010723        | NP_034853         | 1289                            | 1590                            |
| 26    | 99052_at          | D76432   | NM_011546        | NP_035676         | 1290                            | 1591                            |
| 26    | 104645_at         | AI853712 | NM_033563        | NP_291041         | 1291                            | 1592                            |
| 26    | 112898_at         | AW045576 | NM_033563        | NP_291041         | 1291                            | 1592                            |
| 26    | 107020_at         | AW049268 | NM_033563        | NP_291041         | 1291                            | 1592                            |
| 26    | 114906_at         | AI646497 | NM_033563        | NP_291041         | 1291                            | 1592                            |
| 26    | 100735_at         | L77900   | NM_013800        | NP_038828         | 1292                            | 1593                            |
| 26    | 100050_at         | M31885   | -                | AAA37879          | 1293                            | 1594                            |
| 26    | 97487_at          | X70296   | NM_009255        | NP_033281         | 1294                            | 1595                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 27    | 103800_at         | AB019003 | NM_013790        | NP_038818         | 1295                            | 1596                            |
| 27    | 165744_at         | AW124768 | NM_013790        | NP_038818         | 1295                            | 1596                            |
| 27    | 169447_r_at       | AV168159 | NM_013790        | NP_038818         | 1295                            | 1596                            |
| 27    | 100064_f_at       | M63801   | NM_010288        | NP_034418         | 1296                            | 1597                            |
| 27    | 100065_r_at       | M63801   | NM_010288        | NP_034418         | 1296                            | 1597                            |
| 27    | 113916_at         | AI182792 | NM_009701        | NP_033831         | 1297                            | 1598                            |
| 27    | 92792_at          | U69135   | NM_011671        | NP_035801         | 1298                            | 1599                            |
| 27    | 110692_at         | AI606632 | NM_011325        | NP_035455         | 1299                            | 1600                            |
| 27    | -                 | AK010437 | NM_027399        | NP_081675         | 1300                            | 1601                            |
| 27    | 163918_at         | AV216203 | -                | -                 | 1301                            | -                               |
| 27    | 169112_r_at       | AV216203 | -                | -                 | 1301                            | -                               |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|       | none              |          |                  |                   |                                 |                                 |
|       | 140497_at         | AW124202 | -                | -                 | 1302                            | -                               |
|       | 131152_at         | AW142707 | -                | -                 | 1303                            | -                               |

Table 107

| mouse |                   |         |                  |                   |                                 |                                 |
|-------|-------------------|---------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 2     | 97655_at          | Y11169  | NM_007882        | NP_031908         | 1304                            | 1602                            |
| 2     | 97655_at          | Y11169  | NM_007882        | NP_031908         | 1304                            | 1602                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 5     | -                 | BB850070 | -                | -                 | 1305                            | -                               |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 7     | 106071_at         | A1852189 | -                | -                 | 1306                            | -                               |
| 7     | 109537_at         | AW122537 | NM_019835        | NP_062809         | 1307                            | 1603                            |
| 7     | 93015_at          | X55021   | NM_010356        | NP_034486         | 1308                            | 1604                            |
| 7     | 164617_i_at       | AV168894 | NM_010356        | NP_034486         | 1308                            | 1604                            |
| 7     | 103665_at         | AW12253  | NM_130450        | NP_569717         | 1309                            | 1605                            |
| 7     | 94418_at          | A1839004 | NM_130450        | NP_569717         | 1309                            | 1605                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 8     | 102258_at         | AF062476 | NM_009294        | NP_033317         | 1310                            | 1606                            |
| 8     | 103460_at         | A1849939 | NM_029083        | NP_083359         | 1311                            | 1607                            |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | 167736_r_at       | AV212218 | NM_133687        | NP_598448         | 1312                            | 1608                            |
| 8     | 95701_at          | AW124069 | NM_133687        | NP_598448         | 1312                            | 1608                            |
| 8     | 110541_at         | A1843915 | -                | -                 | 1313                            | -                               |
| 8     | 106088_at         | A1844788 | -                | -                 | 1314                            | -                               |
| 8     | 165731_at         | AY204596 | -                | -                 | 1315                            | -                               |
| 8     | 162562_at         | A1840292 | NM_023270        | NP_075759         | 1316                            | 1609                            |
| 8     | 108010_at         | AW210455 | NM_023270        | NP_075759         | 1316                            | 1609                            |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | -                 | AW048177 | -                | -                 | 1317                            | -                               |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | 162963_at         | A1835402 | -                | -                 | 1318                            | -                               |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | 115700_at         | A1314284 | NM_025807        | NP_080083         | 1319                            | 1610                            |
| 8     | -                 | AK008761 | NM_028841        | NP_083117         | 1320                            | 1611                            |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | 106860_at         | AW121537 | -                | -                 | 1321                            | -                               |
| 8     | 102018_at         | A1854879 | -                | -                 | 1322                            | -                               |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | 115700_at         | A1314284 | NM_025807        | NP_080083         | 1319                            | 1610                            |

Table 108

|   |           |          |           |           |      |      |
|---|-----------|----------|-----------|-----------|------|------|
| 8 | 115700_at | AI314284 | NM_025807 | NP_080083 | 1319 | 1610 |
| 8 | -         | X73360   | -         | CAA51770  | 1323 | 1612 |
| 8 | none      |          |           |           |      |      |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 10    | 96570_at       | AV381276 | -             | -              | 1324                         | -                            |
| 10    | 111191_at      | AW120521 | -             | -              | 1325                         | -                            |

| mouse |                |         |               |                |                              |                              |
|-------|----------------|---------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 11    | none           |         |               |                |                              |                              |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 12    | 101913_at      | AW214298 | NM_010423     | NP_034553      | 1326                         | 1613                         |
| 12    | 170560_r_at    | AV333303 | NM_010423     | NP_034553      | 1326                         | 1613                         |
| 12    | 161451_r_at    | AV292193 | NM_010423     | NP_034553      | 1326                         | 1613                         |
| 12    | 95671_at       | AJ243895 | NM_010423     | NP_034553      | 1326                         | 1613                         |

| mouse |                |         |               |                |                              |                              |
|-------|----------------|---------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 16    | none           |         |               |                |                              |                              |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 17    | none           |          |               |                |                              |                              |
| 17    | none           |          |               |                |                              |                              |
| 17    | 94370_at       | AA615075 | -             | -              | 1327                         | -                            |
| 17    | 94370_at       | AA615075 | -             | -              | 1327                         | -                            |
| 17    | 160446_at      | U45058   | -             | AA87581        | 1328                         | 1614                         |
| 17    | 171144_i_at    | AV087463 | -             | -              | 1329                         | -                            |
| 17    | 168955_j_at    | AV092579 | -             | -              | 1330                         | -                            |
| 17    | 169746_at      | AV090198 | -             | -              | 1331                         | -                            |
| 17    | -              | AJ845714 | NM_011126     | NP_035256      | 1332                         | 1615                         |

| mouse |                |         |               |                |                              |                              |
|-------|----------------|---------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank | mouse Ref Seq | mouse Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 20    | 94297_at       | U16959  | NM_010220     | NP_034350      | 1333                         | 1616                         |
| 20    | 100636_at      | U28656  | NM_007918     | NP_031944      | 1334                         | 1617                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse Ref Seq | mouse Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 25    | 92313_at       | AJ844065 | NM_007730     | NP_031756      | 1335                         | 1618                         |
| 25    | 92314_at       | U25652   | NM_007730     | NP_031756      | 1335                         | 1618                         |



Table 109

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 27    | 109069_at      | A1255982 | NM_016917     | NP_058613      | 1336                         | 1619                         |
| 27    | 97759_at       | U09383   | NM_010610     | NP_034740      | 1337                         | 1620                         |
| 27    | 97759_at       | U09383   | NM_010610     | NP_034740      | 1337                         | 1620                         |
| 27    | 98994_at       | AF081499 | NM_011402     | NP_035532      | 1338                         | 1621                         |
| 27    | none           |          |               |                |                              |                              |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|       | none           |          |               |                |                              |                              |
|       | none           |          |               |                |                              |                              |
|       | 94637_at       | X85992   | -             | CAA59984       | 1339                         | 1622                         |
|       | none           |          |               |                |                              |                              |
|       | none           |          |               |                |                              |                              |
|       | none           |          |               |                |                              |                              |
|       | 114451_at      | A1848332 | -             | -              | 1340                         | -                            |
|       | 93178_at       | AW050346 | -             | -              | 1341                         | -                            |
|       | none           |          |               |                |                              |                              |
|       | none           |          |               |                |                              |                              |
|       | 96220_at       | AW123157 | -             | -              | 1342                         | -                            |
|       | 160978_at      | AW261569 | -             | -              | 1343                         | -                            |
|       | none           |          |               |                |                              |                              |
|       | 108954_at      | AW060536 | NM_025980     | NP_080256      | 1344                         | 1623                         |
|       | 164706_at      | AV022728 | NM_025980     | NP_080256      | 1344                         | 1623                         |
|       | none           |          |               |                |                              |                              |
|       | 170083_r_at    | AV338868 | -             | -              | 1345                         | -                            |
|       | 117306_at      | AW120879 | -             | -              | 1346                         | -                            |
|       | 170414_i_at    | AV333624 | -             | -              | 1347                         | -                            |
|       | 105944_at      | A1844171 | -             | -              | 1348                         | -                            |
|       | none           |          |               |                |                              |                              |

Table 110

| mouse |                   |         |                  |                   |                                 |                                 |
|-------|-------------------|---------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 3     | none              |         |                  |                   |                                 |                                 |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 4     | 96953_at          | AW120786 | NM_019568        | NP_062514         | 1349                            | 1624                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 8     | 113969_at         | AW208826 | -                | -                 | 1350                            | -                               |
| 8     | -                 | BB553960 | -                | -                 | 1351                            | -                               |
| 8     | 163461_at         | AA589180 | NM_024246        | NP_077208         | 1352                            | 1625                            |
| 8     | 170263_f_at       | AV092570 | NM_024246        | NP_077208         | 1352                            | 1625                            |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | 163845_i_at       | AA387607 | NM_026345        | NP_080621         | 1353                            | 1626                            |
| 8     | 111405_at         | A1847396 | -                | -                 | 1354                            | -                               |
| 8     | 111405_at         | A1847396 | -                | -                 | 1354                            | -                               |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | 98092_at          | AA790307 | NM_139198        | NP_631937         | 1355                            | 1627                            |
| 8     | none              |          |                  |                   |                                 |                                 |
| 8     | 105858_at         | A1847445 | -                | -                 | 1356                            | -                               |
| 8     | none              |          |                  |                   |                                 |                                 |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 10    | 97525_at          | U48403   | NM_008194        | NP_032220         | 1357                            | 1628                            |
| 10    | 169383_r_at       | AV087577 | NM_008194        | NP_032220         | 1357                            | 1628                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 12    | 160508_at         | AW209486 | -                | -                 | 1358                            | -                               |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 17    | 97900_at          | A1845714 | NM_011126        | NP_035256         | 1359                            | 1629                            |
| 17    | 97900_at          | A1845714 | NM_011126        | NP_035256         | 1359                            | 1629                            |
| 17    | 169613_at         | AV297752 | NM_021554        | NP_067529         | 1360                            | 1630                            |
| 17    | 95045_at          | A1844469 | NM_021554        | NP_067529         | 1360                            | 1630                            |

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 25    | -                 | AF312019 | -                | -                 | 1361                            | -                               |

Table 111

| mouse |                   |          |                  |                   |                                 |                                 |
|-------|-------------------|----------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 26    | none              |          |                  |                   |                                 |                                 |
| 26    | 113151_at         | A1854569 | NM_026570        | NP_080846         | 1362                            | 1631                            |
| 26    | 171096_i_at       | AV045457 | NM_026570        | NP_080846         | 1362                            | 1631                            |
| 26    | 169003_f_at       | AV121958 | NM_026570        | NP_080846         | 1362                            | 1631                            |

| mouse |                   |         |                  |                   |                                 |                                 |
|-------|-------------------|---------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
|       | none              |         |                  |                   |                                 |                                 |
|       | none              |         |                  |                   |                                 |                                 |
|       | none              |         |                  |                   |                                 |                                 |

Table 112

| mouse |                   |         |                  |                   |                                 |                                 |
|-------|-------------------|---------|------------------|-------------------|---------------------------------|---------------------------------|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP | SEQ ID NO:<br>(nucleotide seq.) | SEQ ID NO:<br>(amino acid seq.) |
| 2     | 97655_at          | Y11169  | NM_007882        | NP_031908         | 1363                            | 1632                            |

| mouse |                   |         |                  |                   |      |      |
|-------|-------------------|---------|------------------|-------------------|------|------|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP |      |      |
| 5     | 160489_at         | L24118  | NM_009396        | NP_033422         | 1364 | 1633 |

| mouse |                   |         |                  |                   |  |  |
|-------|-------------------|---------|------------------|-------------------|--|--|
| cat#  | mouse<br>Probe ID | GenBank | mouse_Ref<br>Seq | mouse_Ref<br>SeqP |  |  |
| 7     | none              |         |                  |                   |  |  |

| mouse |                   |          |                  |                   |      |   |
|-------|-------------------|----------|------------------|-------------------|------|---|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP |      |   |
| 17    | 133045_at         | AU040173 | -                | -                 | 1365 | - |

| mouse |                   |          |                  |                   |      |      |
|-------|-------------------|----------|------------------|-------------------|------|------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP |      |      |
| 22    | 103611_at         | AB012693 | NM_010581        | NP_034711         | 1366 | 1634 |

| mouse |                   |          |                  |                   |      |      |
|-------|-------------------|----------|------------------|-------------------|------|------|
| cat#  | mouse<br>Probe ID | GenBank  | mouse_Ref<br>Seq | mouse_Ref<br>SeqP |      |      |
|       | 94780_at          | A1997985 | -                | -                 | 1367 | -    |
|       | 136442_at         | A1593316 | -                | -                 | 1368 | -    |
|       | none              |          |                  |                   |      |      |
|       | none              |          |                  |                   |      |      |
|       | none              |          |                  |                   |      |      |
|       | none              |          |                  |                   |      |      |
|       | 130772_at         | A1838844 | NM_011838        | NP_035968         | 1369 | 1635 |
|       | 137205_f_at       | A1839851 | NM_011838        | NP_035968         | 1369 | 1635 |
|       | none              |          |                  |                   |      |      |
|       | none              |          |                  |                   |      |      |
|       | none              |          |                  |                   |      |      |

Table 113

| mouse |                |         |               |                |                              |                              |
|-------|----------------|---------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 1     | 99669_at       | X15986  | NM_008495     | NP_032521      | 1370                         | 1636                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 2     | 92936_at       | X14943   | NM_007727     | NP_031753      | 1371                         | 1637                         |
| 2     | 164059_f_at    | X14943   | NM_007727     | NP_031753      | 1371                         | 1637                         |
| 2     | 105826_at      | A1843096 | NM_007727     | NP_031753      | 1371                         | 1637                         |
| 2     | 170177_r_at    | AV331012 | NM_007727     | NP_031753      | 1371                         | 1637                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 7     | 95343_at       | AB013848 | NM_011059     | NP_035189      | 1372                         | 1638                         |
| 7     | 103803_at      | AB013849 | NM_011060     | NP_035190      | 1373                         | 1639                         |
| 7     | none           |          |               |                |                              |                              |

| mouse |                |         |               |                |                              |                              |
|-------|----------------|---------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 8     | none           |         |               |                |                              |                              |
| 8     | none           |         |               |                |                              |                              |
| 8     | none           |         |               |                |                              |                              |
| 8     | none           |         |               |                |                              |                              |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
| 27    | 113916_at      | A1182792 | NM_009701     | NP_033831      | 1374                         | 1640                         |

| mouse |                |          |               |                |                              |                              |
|-------|----------------|----------|---------------|----------------|------------------------------|------------------------------|
| cat#  | mouse Probe ID | GenBank  | mouse_Ref Seq | mouse_Ref SeqP | SEQ ID NO: (nucleotide seq.) | SEQ ID NO: (amino acid seq.) |
|       | -              | AF184981 | NM_018881     | NP_061369      | 1375                         | 1641                         |
|       | none           |          |               |                |                              |                              |

5. Determination of the expression levels of the genes narrowed down in Section 4 in the human goblet cell differentiation model and the mouse OVA antigen-exposed bronchial hypersensitivity model

[0230] Eighty-eight genes, most of which were recognized as genes whose expression levels were altered in human and mouse, were selected from the genes narrowed down in Section 4. A quantitative PCR assay was carried out with ABI 7700 using cDNA from the human goblet cell differentiation model and using cDNA from the mouse OVA antigen-exposed bronchial hypersensitivity model.

[0231] The primers and TaqMan probe used in the assay with ABI 7700 were designed based on the information on the sequence of each gene utilizing Primer Express (PE Biosystems). The 5' and 3' ends of the TaqMan probe were labeled with FAM (6-carboxy-fluorescein) and TAMRA (6-carboxy-N,N,N',N'-tetramethylrhodamine), respectively. The nucleotide sequences of oligonucleotides for the forward primer (F), reverse primer (R), and TaqMan probe (TP) for each gene are shown below. The nucleotide sequences of the forward primer, TaqMan probe, and reverse primer used in the detection of each gene are indicated after probe ID, Accession No., symbol for each gene, and gene name, each of which are separated by //. The number in the parenthesis after each nucleotide sequence refers to the corresponding

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SEQ ID NO. The 5' and 3' ends of the TaqMan probe were labeled with FAM (6-carboxy-fluorescein) and TAMRA (6-carboxy-N,N,N',N'-tetramethylrhodamine), respectively.

Genes whose expression levels varied in both humans and mice:

```

5      A1//NM_005409//SCYB11//"small inducible cytokine subfamily B
      (Cys-X-Cys), member 11 precursor"
      CCTTGGCTGTGATATTGTGTGC (1642)
10     ACGCTGTCTTTGCATAGGCCCT (1643)
      CTCAATATCTGCCACTTTCCTGCTGC (1644)

      A4//U21931//FBP1//"fructose-1,6-biphosphatase (FBP1) gene, exon 7"
15     TGTCTCACACAGCAGTACCCTG (1645)
      TGCTGTGCACCTTACATTCCTAGAGAGCAG (1646)
      GTGCCAAGCATTCTACAGCATT (1647)

20     A6//"NM_003856, NM_016232"//IL1RL1//interleukin 1 receptor-like 1

25     TGA CTGAGGACGCAGGTGATT (1648)
      CCAGGTCCTTCACGGTCAAGGATGA (1649)
      GGGCTCCGATTACTGGAAACA (1650)

30     A9//U88317//ALOX15//arachidonate 15-lipoxygenase
      CTGCAGACCTGGTGTGCGAGAG (1651)
35     TCACTGAAATCGGGCTGCAAGGG (1652)
      ACAGGAAACCCTCGGTCTCTG (1653)

40     A10//D26579//ADAM8//a disintegrin and metalloproteinase domain 8
      precursor
      TGCTCCTCCGGTCACTGTG (1654)
      CAGCCCACCCTTCCCAGTTCCTG (1655)
45     TTGATGACCTGCTTTGGTGC (1656)

      A11//Y12653//diubiquitin//diubiquitin
50     TGTCCGGTCTAAGACCAAGGTTC (1657)
      TGTGCAGGACCAGGTTCTTTTGCTGG (1658)
      GGCTTCTCCGTGGCTTTAAGA (1659)
55

```

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A19//NM\_000120//EPHX1//epoxide hydrolase 1

TGAGGAGATCCACGACTTACACC (1660)

CGATAAGTTCCGTTTCACCCACCTTTG (1661)

TCAGGTAGTTGGAGTTGAAGCCAT (1662)

A22//XM\_051522//RDC1//G protein-coupled receptor

CGTGGACCGCTACCTCTCC (1663)

TCACCTACTTCACCAACACCCCCAGC (1664)

GGCGTACCATCTTCTTCCTGC (1665)

A24//NM\_000598//IGFBP3//insulin-like growth factor-binding protein 3

CAGCGCTACAAAGTTGACTACGA (1666)

CCATATTCTGTCTCCCGCTTGGACTCG (1667)

CAGGTGATTCAAGTGTGTCTTCCA (1668)

A25//m62402//IGFBP6//insulin-like growth factor-binding protein 6

CCAAGCAGGCACTGCCC (1669)

CCACAGGATGTGAACCGCAGAGACC (1670)

CGTGGTAGAGGTGCCTGGA (1671)

A26//NM\_002964//S100A8//S100 calcium-binding protein A8

AGCTGGAGAAAGCCTTGAACCTCT (1672)

TCCATGCCGTCTACAGGGATGACCTG (1673)

CTGAGGACACTCGGTCTCTAGCA (1674)

E1//NM\_001843//CNTN1//contactin 1

GGTAGAGGAGAGCCCAGTATACCA (1675)

TGCTGCACCAAATGTGGCTCCTTC (1676)

GGCTTAAATGCCACTATGTAACCA (1677)

A57//NM\_080657//cig5//vipirin

AAGAGGACATGACGGAACAGATC (1678)

AAGCACTAAACCCTGTCCGCTGGAAAGT (1679)

CCACAATTCTCACCTCAATTAAGA (1680)

A59//u77643//SECTM1//secreted and transmembrane 1 precursor

TGGGACACCAGAGAAATAACAGAC (1681)

5 CACGCTGGAGGTTTCAGGTGCAGAAC (1682)

AGGCCAGAACCCAGTGTCTAG (1683)

10 A68//NM\_000096//CP//ceruloplasmin (ferroxidase)

TGGATGCTCAGCTGTCTAGAATC (1684)

CATCTGAAAGCCGGTTTGCAAGCCT (1685)

15 TGTTACACTCCTGGACCTGGAA (1686)

B13//NM\_012258//HEY1//hairy/enhancer-of-split related with YRPW motif 1

20 CAATGCACTGAGCCCTTCAG (1687)

CCCACGCAGGCTGCAAACCTTG (1688)

TCCGTCCCCCAAGGTCTATAG (1689)

25 B14//NM\_033197//MGC14597//von Ebner minor salivary gland protein

GGCTTCCTTCAATGGCATGT (1690)

CAGCATTGACCGTCTGGAGTTTGACCT (1691)

30 GTCACCCTTGATGGCAGGAT (1692)

A77//NM\_003355//UCP2//uncoupling protein 2

35 CCCTACTGCCACTGTGAAGTTTCT (1693)

CACAGCTGCCTGCATCGCAGATCT (1694)

AGCAGTATCCAGAGGAAAGGTGAT (1695)

40 A78//NM\_012449//STEAP//six transmembrane epithelial antigen of the prostate

TGGAAAATGAAGCCTAGGAGAAAT (1696)

45 TGCTGGTCTCTCCCGTGCCTTATGC (1697)

TCTGAAGGGCAGTCAAATTCATC (1698)

50 B21//NM\_016583, NM\_130852//LOC51297//LUNX protein; PLUNC (palate

lung and nasal epithelium clone); tracheal epithelium enriched protein

TGGCCACCGTCTCTATGTCA (1699)  
CTCGGCATAAAGCTCCAAGTGAATACGCC (1700)  
CCAGCCTCAACAGACTTGCA (1701)

B23//NM\_006424//SLC34A2// "solute carrier family 34 (sodium phosphate), member 2"

CACTGTCCCTCGACTGCTAACT (1702)  
CTACAAGGAGAACATCGCCAAATGCCA (1703)  
AAGATCCGGGAGGTGGAAATT (1704)

A83//u46569//AQP5//aquaporin 5 (exon4)

TTTCTGGGTAGGGCCCATC (1705)  
CTGGCTGCCATCCTTTACTTCTACCTGCTC (1706)  
ATGGCCACACGCTCACTCA (1707)

A84//AF030880//SLC26A4// "PDS (pendrin) mRNA, solute carrier family 26, member 4"

TTTGCCTCCTGAACTTCCACC (1708)  
CTTGTTCTCGGAGATGCTGGCTGCAT (1709)  
CCTACTGACACTGCAATAGCATAAGC (1710)

A89//x87159//SCNN1B//amiloride-sensitive sodium channel

ATTGATGAACGGAACCCCC (1711)  
CACCCCATGGTCCTTGATCTCTTTGGA (1712)  
TGCTGAGCTGCTTGTTAAGCC (1713)

A115//U70981//IL13RA2// "interleukin 13 receptor,  $\alpha 2$ "

TGCTCAGATGACGGAATTTGG (1714)  
TGAGTGGAGTGATAAACAATGCTGGGAAGG (1715)  
TGGTAGCCAGAAACGTAGCAAAG (1716)

Mouse genes;



A27//NM\_019494 //SCYB11//"small inducible cytokine subfamily B  
(Cys-X-Cys), member 11 precursor"

TGGCAGAGATCGAGAAAGCTTC (1717)  
ACCCGAGTAACGGCTGCGACAAAGTT (1718)  
TCCAGGCACCTTTGTCGTTT (1719)

A30//NM\_019395//FBP1//"fructose-1,6-biphosphatase (FBP1) gene,  
exon 7"

CCTCTGAAGATGTGCAGGAGTTC (1720)

CACAAAGCCAAGTGAAGGCCAGCC (1721)

CAGAATGGAGTAGCGTCACTTGA (1722)

A32//NM\_010743//IL1RL1//interleukin 1 receptor-like 1

TCCTAGGTGGCCAGAGTTGTG (1723)  
CCCAAGACCTCACTGATCACAACAGCA (1724)  
CACCCGGAGTAACACCATTATCA (1725)

A35//NM\_009660//ALOX15//arachidonate 15-lipoxygenase

TACCCACCGCCGATTT (1726)  
CACGCCCTTGGATCCCCCAATG (1727)  
CCCAGCATTTGGCCAGG (1728)

A36//x13335//ADAM8//a disintegrin and metalloproteinase domain 8  
precursor

GGCTCTCCAACCCCTATTCTA (1729)  
AGACAGTTTCTACCAACCAGCCCCAAG (1730)  
GCCTCTTTGGTTTCACTATGGG (1731)

A37//NM\_0023137//diubiquitin//diubiquitin

TGACAAGGAAACCACTATCCACC (1732)  
CCTGAAGGTGGTGAAGCCCAGTGATG (1733)  
CCAGAAACAAGGGCAGCTCT (1734)

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A45//NM\_010145//EPHX1//epoxide hydrolase 1

CCTGGCTGCCTACATCTTAGAGAA (1735)

CTGGACCAAGTCAGAATACCGTGAAGTGA (1736)

TTAGTCAGCAGATCTTCCAGGGAG (1737)

A48//NM\_007722//RDC1//G protein-coupled receptor

TGGGAGCATCTTCTTCCTCG (1738)

TGCATGAGCGTGGACCGCTATCTC (1739)

GCCGGTGAAGTAGGTGATGG (1740)

A50//NM\_008343//IGFBP3//insulin-like growth factor-binding protein

3

GCAGGCAGCCTAAGCACCTA (1741)

CCTCCCAACCTGCTCCAGGAAACA (1742)

TGCTCCTCCTCGGACTCACT (1743)

A51//NM\_008344//IGFBP6//insulin-like growth factor-binding protein

6

GGAGAGCAAACCCCAAGGAG (1744)

TGCCTCCCGCTCTCGTGACACAA (1745)

TCTTCTGCCGGTCTCTGTGG (1746)

A52//NM\_013650//S100A8//S100 calcium-binding protein A8

GAGTGTCTCAGTTTGTGCAGAA (1747)

CACCCACTTTTATCACCATCGCAAGGAA (1748)

CTTGTGGCTGTCTTTGTGAGATG (1749)

E2//NM\_007727//CNTN1//contactin 1

CCCAGGAGGCCTGAGAATAGA (1750)

TGGTTCCGACAATCACAGCCCTATCTCT (1751)

GAATCGTCTTGGTCTGGATCGT (1752)

A64//NM\_021384//cig5//vipirin

GACAGCTTCGATGAGCAGGTT(1753)

5

CCTTGACCACGGCCAATCAGAGCAT(1754)

CTGCACCACCTCCTCAGCTT(1755)

10

A66//AF210700//SECTM1//secreted and transmembrane 1 precursor

AAGGAGTCCAGGCCCAGC(1756)

CAGATGCTCAGGACAAACACTCAGGGAAGT(1757)

TCCATGCAGCTTCCAGGAG(1758)

15

A72//NM\_007752//CP//ceruloplasmin (ferroxidase)

ACAGCAACAACCTGTGCCTACA(1759)

20

TCAACCTGTTCCCTGCCACCCTAATTG(1760)

TGCAACCCAGCTTTCAGATG(1761)

25

B18//NM\_010423//HEY1//hairy/enhancer-of-split related with YRPW motif 1

CACTCTCAGTCTCACGGATTTCA(1762)

CCAGTGTCGACCTGCGTAAGCGATC(1763)

30

TTCACAGGCACCAAGCTACTTTC(1764)

B19//U46068//MGC14597//von Ebner minor salivary gland protein

35

CACCCTGACCAAGATCCTTGA(1765)

TACACACTGCTGCCCAATGAGAATGGC(1766)

ACCCTTGCTCACAGACCACAT(1767)

40

A81//NM\_011671//UCP2//uncoupling protein 2

GCATTGGCCTCTACGACTCTGT(1768)

CCTGCATGCTCTGAGCCCTTGGTGTA(1769)

45

GCCTGGAAGCGGACCTTTA(1770)

A82//NM\_027399//STEAP//six transmembrane epithelial antigen of the prostate

50

55

AGTGACGATGTTACAAACCCAGAA (1771)  
 TGCTCGTCTCTCCCGAGTCCTTAGTCG (1772)  
 GAATTCCTGCGTGTGCTGAAG (1773)

B24//NM\_011126//LOC51297//LUNX protein; PLUNC (palate lung and nasal  
 epithelium clone); tracheal epithelium enriched protein

CAGCTTGCTCAATGGAGTCACT (1774)  
 AGGACATACCTTGCCCTGGATCAGCT (1775)  
 ACCAGGGTGACATCCAAACC (1776)

B26//NM\_011402//SLC34A2//"solute carrier family 34 (sodium  
 phosphate), member 2"

CTCCAGCACCTCTTCCTCCA (1777)  
 CCGAACCGTCAGCAATGAAGAAGCAA (1778)  
 TGTTAGCGCCCATGATGATG (1779)

A98//AF087654//AQP5//aquaporin 5 (exon4)

GAACCCAGCCCGATCTTTC (1780)  
 CCCTGCGGTGGTCATGAATCGGT (1781)  
 CCCAGAAGACCCAGTGAGAGG (1782)

A99//AF167411//SLC26A4//"PDS (pendrin) mRNA, solute carrier family  
 26, member 4"

GGTTCTTGCTCCTGTCCTG (1783)  
 CATCTGTGGGCCTGTTTTCGGACATG (1784)  
 AATGGAAAAGGATGCAGCCA (1785)

A104//AF112186//SCNN1B//amiloride-sensitive sodium channel

TGGTCCTTATTGATGAGCGGA (1786)  
 TGACCACCCGGTGGTTCTCAATTTGTT (1787)  
 CGGGTTGCTGCTGTTGTG (1788)

A127//U65747//IL13RA2//"interleukin 13 receptor,  $\alpha 2$ "

ACACAGGGCCAGACTCAAAGAT (1789)  
 AACCTGAACCCACATTGAGCCTCCATG (1790)  
 GCACACACTTCTTTGTTTCAGATCC (1791)

Genes whose expression levels tend to vary in both humans and mice:  
 Human genes;

A2//NM\_006705//GADD45G// "growth arrest and DNA damage inducible,  $\gamma$ "

CCCAGCATCACCTCCCCGA (1792)

CCCAGCATCACCTCCCCGA (1793)

GCGTCACCACGTCGATCAG (1794)

A20//d00632//GPX3//glutathione peroxidase 3

GGACACATTAATATCACCCGGA (1795)

ACAGCCTCATTCATGGTTTCACGTGC (1796)

CCCGAGATTAGGAGTTGCTGTT (1797)

A53//NM\_005168//ARHE// "ras homolog gene family, member E"

CCACAAAGCGGATTTACACATGCC (1798)

CCACAAAGCGGATTTACACATGCC (1799)

TCCTTTCGTAAGTCCGTAGCAACT (1800)

A67//NM\_002305//LGALS1//  $\beta$ -galactosidase binding lectin precursor

TCCTGACGCTAAGAGCTTCGTGCTGAA (1801)

TCCTGACGCTAAGAGCTTCGTGCTGAA (1802)

AAGCGAGGGTTGAAGTGCA (1803)

C7//NM\_005672//PSCA//prostate stem cell antigen

AGGCACTGCCCTGCTGTGCTACTCCT (1804)

AGGCACTGCCCTGCTGTGCTACTCCT (1805)

GCTCACCTGGGCTTTGCA (1806)

A93//NM\_002659//UTPR//urokinase-type plasminogen receptor

ACACCACCAAATGCAACGAGG (1807)

TTGAAAATCTGCCGCAGAATGGCCG (1808)

TCCCCTTGCAGCTGTAACACTG (1809)

A96//j05070//MMP9//type IV collagenase

ACCTCGAACTTTGACAGCGAC (1810)

TGCCCCGACCAAGGATACAGTTTGTT (1811)

GAGGAATGATCTAAGCCCAGC (1812)

A120//S78825//ID1// "inhibitor of DNA-binding 1, dominant negative helix-loop-helix protein"

ATGAACGGCTGTTACTCACG (1813)  
TGGAGATTCTCCAGCACGTCATCGACT (1814)  
GATTCCGAGTTCAGCTCCAA (1815)

Mouse genes;

A28//NM\_011817//GADD45G// "growth arrest and DNA-damage-inducible,  $\gamma$ "

GCATTGCATCCTCATTTTGAAT (1816)  
TGAGGACACATGGAAGGACCCTGCC (1817)  
CCTCGCAGAACAACTGAGCTT (1818)

A46//u13705//GPX3//glutathione peroxidase 3

AGAAGAACTTGGGCCATTTGG (1819)  
TTCTGGGCTTCCCTTCCAACCAATTTG (1820)  
TCTCGCCTGGCTCCTGTTT (1821)

A60//NM\_028810//ARHE// "ras homolog gene family, member E"

GGGATGGTGCCCCCTAGACTAG (1822)  
CTGTCTGCTGGTGCCACTTCCTTCAA (1823)  
GGGTTTTGCCAGAACAGCATT (1824)

A71//NM\_008495//LGALS1//  $\beta$ -galactosidase-binding lectin precursor

ACAGCAACAACCTGTGCCTACA (1825)  
CCCATGGAGACGCCAACACCATTTG (1826)  
CCCATCTTCCTTGGTGTTACA (1827)

C8//AW209486//PSCA//prostate stem cell antigen

CATCCCATCTCAGCCTTTACCA (1828)  
CCTACTCTCCAGGGCCTGAGCCAGTG (1829)  
GCCCTACCAAGTTTTGCTCAGA (1830)

A108//NM\_011113//UTPR//urokinase-type plasminogen receptor

CAATGGTGGCCCAGTTCTG (1831)  
AGCTTTCCACCGAATGGCTTCCAGTGT (1832)  
GGGTATTGTTCCCCTCACAGC (1833)

A111//NM\_013599//MMP9//type IV collagenase

CCATGCACTGGGCTTAGATCA(1834)

AGCGTGCCGGAAGCGTCAT(1835)

TCGAGGTAGCTATACAGCGGG(1836)

A132//U43884//ID1//"inhibitor of DNA-binding 1, dominant negative  
helix-loop-helix protein"

CGACATGAACGGCTGCTACTC(1837)

CGCCTCAAGGAGCTGGTGCCC(1838)

CTTGCTCACTTTGCGGTTCTG(1839)

Genes whose expression levels varied in humans:

Human genes;

A3//NM\_000625//NOS2A//"nitric oxide synthase 2A (inducible,  
hepatocytes)"

ACCCTGAGCTCTTCGAAATCC(1840)

TTAGCTCCAGTTCCCGAAACC(1841)

TTAGCTCCAGTTCCCGAAACC(1842)

A5//NM\_005101//ISG15//"interferon-stimulated protein, 15 kDa"

GGGACCTGACGGTGAAGATG(1843)

CTGACACCGACATGGAGCTGCTCAG(1844)

GCCAATCTTCTGGGTGATCTG(1845)

A8//NM\_003956//CH25H//cholesterol 25-hydroxylase

ACGTGGTCAACATCTGGCTTTC(1846)

TCCGGCTACAACCTCCCTTGGTCCA(1847)

GGAGCGAAGTTGCAGTTAAAGTG(1848)

A12//U19557//SERPINB4 (SCCA2)//"serine (or cysteine) proteinase  
inhibitor, clade B (ovalbumin), member 4"

AGCCACGGTCTCTCAG(1849)

AAGGCCTTTGTGGAGGTCAGGAGGGA(1850)

GCAGCTGCAGCTTCCA(1851)

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A13//NM\_002575//SERPINB2// "serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 2"

ATGGTCCTGGTGAATGCTGTCTA (1852)  
TGTAAGCTCGGCTCAGCGCACACCT (1853)  
GCTTTTCACGCAAGTACATCATCT (1854)

A15//NM\_000433//NCF2//neutrophil cytosolic factor 2  
TAGCATTGGCCACGAGCAT (1855)  
TGAGCCCAGACATTCCAAAATCGACA (1856)  
GATCACCCTGGCTCATATAGCTTCT (1857)

A23//NM\_000435//NOTCH3//Notch homolog 3  
ACTTTGCCAACCGTGAGATCA (1858)  
TCCTGGTGCAGTCTCTCCTGGGCTA (1859)  
ATCCAGCAAGCGCACGAT (1860)

B1//NM\_022168//MDA5//melanoma differentiation associated protein-5  
GACCCAGAAATCAAGGAACCTT (1861)  
CAAGCCTGGCCACATTTGCAGATGA (1862)  
GCCTTTGTGCACCATCATTGT (1863)

B2//NM\_052942//GBP5//guanylate binding protein 5  
AAAATTGGCTGGCAGAGCAA (1864)  
CTGCACAGCTCAGCACAACATTCCAA (1865)  
CGTGCTGGAGCTCACTGAGA (1866)

B3//NM\_018584//PRO1489//hypothetical protein PRO1489  
AGAGGAGCCCAGAGCCTTCT (1867)  
TCATCTGTCTCCCGGCTGATACCA (1868)

CCCACGATGAAATCAACAACCT (1869)

C2//NM\_032323//MGC13102//hypothetical protein MGC13102  
CCAGTCGGTCCAGCTCTTTATT (1870)  
TCAACCTGGCCGTGCTTTCCACTT (1871)  
TCAACCTGGCCGTGCTTTCCACTT (1872)



A54//NM\_003238//TGFB2//"transforming growth factor,  $\beta$ 2"

CCTGAACAACGGATTGAGCTATATC (1873)

CCCAGCGCTACATCGACAGCAAAGT (1874)

AACAGCATCAGTTACATCGAAGGA (1875)

A55//NM\_001539//DNAJA1//"DnaJ (Hsp40) homolog, subfamily A, member 1"

CCAAGTAGAACTGGTGGACTTTGA (1876)

CCAAATCAGGAAAGACGGCGCCA (1877)

CATCCTCATATGCTTCTCCATTGT (1878)

A56//NM\_003032//SIAT1//"sialyltransferase 1 ( $\beta$ -galactoside  $\alpha$ -2,6-sialyltransferase)"

ACGCAGTCCTGAGGTTTAATGG (1879)

CACCCACAGCCAACTTCCAACAAGATGT (1880)

GCACAAAACTACCATTGCGCT (1881)

B9//NM\_013324//CISH //cytokine-inducible SH2-containing protein

TGTGCATAGCCAAGACCTTCTC (1882)

CCAATACCAGCCAGATTCCCGAAGGTA (1883)

CTGGCATCTTCTGCAGGTGTT (1884)

A69//NM\_006408//AGR2//anterior gradient 2 homolog (Xenopus laevis)

CAGTTTGTCTCCTCAATCTGGTT (1885)

TGTCCCCAGGATTATGTTTGTTGACCCA (1886)

TTCCAGTGATATCGGCTCTAACTGT (1887)

A70//NM\_002443 NM\_138634//MSMB//"microseminoprotein,  $\beta$ -, isoform a, b"

ACCTGTCTATAAGGAGTCCTGCTTATC (1888)

CAATGAATGTTCTCCTGGGCAGCGTT (1889)

AAGTCACGAAGGTGGCAAAGAT (1890)

B11//NM\_024539//FLJ23516//hypothetical protein FLJ23516

CTGCTCGAAGGCTACGGAAT (1891)

TCTGCCTTTAATTGCCTCTGCTTCCTG (1892)

TGCGTAGTTGAAGCCTTCCA (1893)

B15//NM\_002247//KCNMA1//"potassium large conductance  
calcium-activated channel, subfamily M,  $\alpha$  member 1"

CCGTGCCAGCAACTTTCATT(1894)  
CCAAAGTGTCCATATTGCCTGGTACGCC(1895)  
CCCTTAAATCAGCCCCGACTTAA(1896)

C5//NM\_018050//FLJ10298//hypothetical protein FLJ10298

CGAGGAAGCCTGTCCATTGA(1897)  
TGACCAGAAATTTGCCAAGCCAAGAGTT(1898)  
GCTTGTGAAAATTGGCCATGT(1899)

A75//NM\_003246//THBS1//thrombospondin 1

TCCAGCATGGTCCTGGAAC(1900)  
TCTTCAGTCACCTTTGCGGATGCTGTCCT(1901)  
TGAACCTCCGTTGTGATAGCATAGG(1902)

A76//NM\_005688//ABCC5//"ATP-binding cassette, sub-family C, member  
5"

GGACACTGCACAGCATCGAT(1903)  
CCGCAGATTCCAACCAAGTTTACCCTCTT(1904)  
CGAAGGTTCCACTGATTGCAA(1905)

E3//NM\_016354//SLC21A12//"solute carrier family 21 (organic anion  
transporter), member 12"

GCGTCACCTACCTGGATGAGA(1906)  
TACATTGCCATCTTCTACACAGCGGCC(1907)  
GCCCCATTTCCGTGTAGATATTCA(1908)

E4//NM\_012434//SLC17A5//"solute carrier family 17 (anion/sugar  
transporter), member 5"

TGCCACTATTCCAGGAATGGTT(1909)  
CACGGTTTGCCATTCTCCAACAGTGTTA(1910)  
CTTCACCTTTGGCGAATAGTGTA(1911)

A87//x52947//GJA1//"cardiac gap junction protein, connexin 43"

GGTTACTGGCGACAGAAACAATTC(1912)  
CGCAATTACAACAAGCAAGCAAGTGAGC(1913)  
TGCCCCATTCGATTTTGTTT(1914)

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A90//d28137//BST2//BST2

CAGTGATGGAGTGTCTGCAATG (1915)

CATCTCCTGCAACAAGAGCTGACCGA (1916)

CACATCCTGAAAGCCCTTCTG (1917)

A94//j04164//IFI9-27//interferon-inducible protein9-27

CCTCTTCTTGAAGTGGTGCTGT (1918)

TGGGCTTCATAGCATTGCGCTACTCC (1919)

CCATCTTCCTGTCCCTAGACTTC (1920)

A97//m24283//ICAM1//major group rhinovirus receptor (ICAM1)

GCTGACGTGTGCAGTAATACTGG (1921)

CAGACAGTGACCATCTACAGCTTTCCGG (1922)

TTCTGAGACCTCTGGCTTCGT (1923)

A113//D13666//OSF-2//osteoblast specific factor 2 (fasciclin I-like)

AGCAAACCACCTTCACGGATC (1924)

AATTAGGCTTGGCATCTGCTCTGAGGCC (1925)

GGTGCCAGCAAAGTGTATTCTCC (1926)

A114//D31784//CDH-6//"cadherin 6, type 2 preproprotein"

CGCAGTTCTGTAGTTGAGTTTCAAGG (1927)

TTAGCAGGGTTGATGTGGAGCGTGAAG (1928)

ACCAAGAACAGAATGCCCAGG (1929)

A116//U21049//DD96//"epithelial protein upregulated in carcinoma, membrane associate"

GCCTTTGCAGTCAACCACTTCTG (1930)

ATGATCCTGACCGTCGGAAACAAGGC (1931)

TCTGTTCCCACCAGGACTCCAT (1932)

A117//X87212//CTSC//cathepsin C

TCTCAGACCCCAATCCTAAGCC (1933)

TCTTGTAGCCAGTATGCTCAAGGCTGTGAA (1934)

CTGCAATAAGGTATGGGAAGCC (1935)

A118//U17077//BENE//BENE protein

TGCCCCGAGCTGATATTTGG (1936)

TAGCCGCCACCCACATAGTATACCCCTT (1937)

CATACATCACCCATCCTTGCAG (1938)

A121//AI979079//FLJ10261//hypothetical protein FLJ10261

TTTGTCACTGAGCTCCGAAGG (1939)

TAGCTGTCAGAGCCAAAGACATCGGAATCT (1940)

TCCCAATGCCTCTGAGGATATT (1941)

A122//M87434//OAS2//2'-5'-oligoadenylate synthetase 2 (69-71 kD)

CATCAGGAACATCCTGCTGCA (1942)

CAGCTCCAATCAGCGAGGCCAGTAATCT (1943)

CACATTATTGGTTGGGTCAACTGG (1944)

A123//AB032953//Odz2//"odd Oz/ten-m homolog 2 (Drosophila, mouse) "

AGGCATGGTCAATGCCAGGT (1945)

TCATGACAACAGCTTCCGCATCGCAA (1946)

AGTCTCACTTATGACGGGCTTGATG (1947)

A124//X82693//E48//"lymphocyte antigen 6 complex, locus D"

AAGCATTCTGTGGTCTGCCC (1948)

CTCGCTTCTGCAAGACCACGAACACA (1949)

TTCACCAGATTCCCCCTCAGAG (1950)

A137//AF061812//KRT16//"keratin type 16 gene, exon 8"

CACCATTGAGAATGCGCAG (1951)

TTTTGCAGATTGACAATGCCAGGCTG (1952)

ACTTGGTCCTGAAGTCATCGG (1953)

Mouse genes;

A29//m84373//NOS2A//"nitric oxide synthase 2A (inducible, hepatocytes) "

TGACGGCAAACATGACTTCAG (1954)

AATTCACAGCTCATCCGGTACGCTGG (1955)

GCCATCGGGCATCTGGTA (1956)

A38//NM\_009126//SERPINB4 (SCCA2)//"serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 4"

ATGACCTCCCAATTCCATTGG (1957)  
ACATGGGAATGGTCGATGCCTTTGA (1958)  
ACCAGAGAAGTCAGCCTTCTGTG (1959)

A39//NM\_011111//SERPINB2//"serine (or cysteine) proteinase inhibitor, clade B (ovalbumin), member 2"

CACATGAGGTTTTGTAGCATGAACT (1960)  
AGCCTCAGAATTGCATCTTCAAGTGCCA (1961)  
GCACTGAAGACTGCTATACAATTGC (1962)

A41//NM\_010877//NCF2//neutrophil cytosolic factor 2

ACCACCTCCTAATTCTAGCCCC (1963)  
AGTTGTCAACCAGGTCACAAGCAAAAAGAGC (1964)  
CATGTAAGGCATAGGCACGCT (1965)

B5//AA959954//MDA5//melanoma differentiation associated protein-5  
GAGAGCAAATGTGGACTCAGCTAGT (1966)

TGTAGCCCGAGATCACCCACAGAGAAC (1967)  
AATGCCCATGAGGTATTGTCCTA (1968)

B6//NM\_010259//GBP5//guanylate binding protein 5

GCAGCAAATAGAGCATTGGC (1969)  
AGCATGAGATGCTGATGGAACAGAAGGA (1970)  
TGCTCCATCTTCTCAGTCAGC (1971)

C4//NM\_024246//MGC13102//hypothetical protein MGC13102

GGGCTGGCGAGATATTGAAC (1972)  
CCATTCAAAGAGGATGCCAACCTGCTC (1973)  
CGCTCGATGCACTGTAGATCA (1974)

A61//NM\_009367//TGFB2//"transforming growth factor,  $\beta$ 2"

TTACCCTAAGCGAGAAAGTGCAA (1975)  
CGCAGCCAACGCGCCCA (1976)  
CCTTAACCCCTGTGGAACAACA (1977)

A62//NM\_008298//DNAJA1// "DnaJ (Hsp40) homolog, subfamily A, member 1"

5 TGTCTAGTTATATGAAGTGAACCAATTGTG (1978)

TGCCTTTGCATTGTATTGCCTCAGCC (1979)

CGAAATGTATTATGCCACCTTCTAGTAA (1980)

10 A63//D16106//SIAT1// "sialyltransferase 1 (β-galactoside α-2,6-sialyltransferase) "

GGGTTACCTGCCCCAAGAGAC (1981)

15 TTCAGAACCAAGGCTGGGCCTTGG (1982)

CAGAAGACACGACGGCACAC (1983)

20 B10//NM\_009895//CISH //cytokine-inducible SH2-containing protein

CAGTGCCCGCAGCTTACAA (1984)

CTGTGTCCGCTAGTCATCAACCGTCTGG (1985)

TCGGAGGTAGTCGGCCATAC (1986)

25 B16//NM\_023270//FLJ23516//hypothetical protein FLJ23516

TCGCAGTGAGACTGCATCATC (1987)

30 CTTCAGTACAAGGAGCAGATGAGCCACCTC (1988)

TTTGCTGACTGCGCATGTTC (1989)

35 B20//NM\_010610//KCNMA1// "potassium large conductance calcium-activated channel, subfamily M, α member 1"

TGGTAACGTGGACACCCTTGA (1990)

40 TAATGATTGCTCCACCAGTTTCCGTGC (1991)

GTTGGCGGCTGCTCATCTT (1992)

45 C6//NM\_026345//FLJ10298//hypothetical protein FLJ10298

GTCTCTGCATGCTAGGCAAG (1993)

AGCCATCCCTCAGTCCAACCACTTTCTG (1994)

50 ACCCTTCTTCTCTTCCTCTTTAAAAAA (1995)

A79//NM\_011580//THBS1//thrombospondin 1  
 GGTGCTGCAGAATGTGAGGTT (1996)  
 5 AGGCTGCTCCAGCTCTACCAACGTCCT (1997)  
 AACCGTTCACCACGTTGTTGT (1998)

10 A80//NM\_013790//ABCC5//"ATP-binding cassette, sub-family C, member  
 5"  
 TGGAGGCTGCATCAAGATTG (1999)  
 TCAGTGGCACTGTCAGATCAAACCTGG (2000)  
 15 TCTTCCGTGTACTGGTTGAAAGG (2001)

A102//M61896//GJA1//"cardiac gap junction protein, connexin 43"  
 20 CGAGCAAACTGGGCGAA (2002)  
 ACAGCGCAGAGCAAAATCGAATGGG (2003)  
 ATGGTGCTTCCGGCCTG (2004)

25 A109//AK003407//IFI9-27//interferon-inducible protein9-27  
 AGGTGTCGGTGCCTGACC (2005)  
 TGGTCTGGTCCCTGTTCAATACTCTTCA (2006)  
 30 GCCCAGGCAGCAGAAGTTC (2007)

A112//m31585//ICAM1//major group rhinovirus receptor (ICAM1)  
 AGTCCGCTGTGCTTTGAGAAC (2008)  
 35 TGGCACCGTGCAATCGTCCG (2009)  
 CCGGAAACGAATACACGGTG (2010)

40 A125//D13664//OSF-2//osteoblast specific factor 2 (fasciclin  
 I-like)  
 TAGCCCAATTAGGCTTGGCATCC (2011)  
 TAGCACCTGTGAACAATGCGTTCTCTGATG (2012)  
 45 TAAGAAGGCGTTGGTCCATGCT (2013)

A126//D82029//CDH-6//"cadherin 6, type 2 preproprotein"  
 50 TTTAAGACCCCCGAGTCCTCTC (2014)  
 CCAATTGGCAGGATCAAAGCCAGTGA (2015)  
 CTCCGCATTTTCTCCACATC (2016)  
 55

A128//AW01791//DD96//"epithelial protein up-regulated in carcinoma,

membrane associate"

GATGCAAGGCCTCATTGCTG (2017)  
 CGCTGTGTTCTTGGTCCTTGTGCAA (2018)  
 AGAAGTGGTTGACGGCGAAGAC (2019)

A129//U74683//CTSC//cathepsin C  
 TCTCAGACACCAATCCTGAGTC (2020)  
 TCTTGCAGCCCCTATGCCCAAGGTTGTGAT (2021)  
 CTGCAATGAGGTATGGGAATCC (2022)

A130//BC012256//BENE//BENE protein  
 CGGGTCTGGGTGTGGACT (2023)  
 CTGCTACACACGTCGCATACCCCTTG (2024)  
 CATACAGCACCCATCCCTGC (2025)

A133//BC006062//FLJ10261//hypothetical protein FLJ10261  
 CGGCATCTGGTATAACATCCTCA (2026)  
 AGGTGTTGGGAAGCTGGCTGTCATCA (2027)  
 GATGAAGTCAGACGTGAAGGAGATC (2028)

A135//NM\_011856//Odz2//"odd Oz/ten-m homolog 2 (Drosophila, mouse) "  
 GAATGATCAACGCCAGGTTTG (2029)  
 ACCTATCACGACAATAGCTTCCGCATTGC (2030)  
 CGCTAATGACGGGTTTGATGC (2031)

A136//X53782//E48//"lymphocyte antigen 6 complex, locus D"  
 GGTCTGCCCCGTCCAACTTC (2032)  
 TTCTGCAAAACCGTCACCTCAGTGGAG (2033)  
 TCACCAGGTTCCCATTCAGAG (2034)

A138//AF053235//KRT16//"keratin type 16 gene, exon 8"  
 TCAAGACCATTGAGGACCTGA (2035)  
 ACACGATCACCTACTCACTCCTCAAGCA (2036)  
 AGCCTGGCATTGTCAATCTG (2037)

Genes whose expression levels tend to vary in humans:  
 Human genes;



A16//NM\_002997//SDC1//syndecan 1

TGGTGGGTTTCATGCTGTACC (2038)

TGAAGAAGAAGGACGAAGGCAGCT (2039)

GCATAGAATTCCTCCTGTTTGGTG (2040)

A21//NM\_024090//LCE//hypothetical protein MGC5487

TCTCTGACCCTTGCACTCTTCA (2041)

CATTTTGATGACCAAAGGCCTGAAGCA (2042)

GAATTTGCTGACAGGTCCATTG (2043)

A88//u17986//SLC6A8//SLC6A8

TCCTACTACTTCCGTTTCCAAAGG (2044)

CCTCTGTTGTGCCCTCTGCTTTGTCAT (2045)

CTCACATCAGTCACCATGGAGAG (2046)

Mouse genes;

A42//NM\_011519//SDC1//syndecan 1

GGCTTTCATGCTGTACCGGAT (2047)

TGGAGGAGCCCAAACAAGCCAATG (2048)

AGGCGTAGAACTCCTCCTGCTT (2049)

A47//NM\_130450//LCE//hypothetical protein MGC5487

AGCTGTACTTTGATTGCAGGTCAA (2050)

CTCACCAGTTGTCCATGTCCACCCAC (2051)

GGACCAATCAGCTAGGACAACTTG (2052)

Genes whose expression levels varied in mice:

Human genes;

A17//NM\_000667//ADH1A//"class I alcohol dehydrogenase,  $\alpha$  subunit"

TTTCCCTTGTTGGCAGTCTTCA (2053)

CCTCTACCCTACATGATCTGGAGCAACAGC (2054)

TTGGAAAGCCCCCAAATGT (2055)

A58//NM\_014375//FETUB//fetuin B

CCGAGTCTCTTGCGAAATACAA (2056)

ACAACCCACTGGCTAGAAGCCCTGGT (2057)

CGGAGGACTGAAGTGAACAGCT (2058)

B22//NM\_014585//SLC11A3// "solute carrier family 11 (proton-coupled  
divalent metal ion transporters), member 3"

AACCGCCAGAGAGGATGCT (2059)

TGGATCCTTGGCCGACTACCTGACCT (2060)

CACATCCGATCTCCCCAAGTA (2061)

A119//V01512//c-fos//cellular oncogene c-fos (complete sequence)

GGCAAGGTGGAACAGTTATCTCC (2062)

TCCGAAGGGAAAGGAATAAGATGGCTGCA (2063)

AGTGTATCAGTCAGCTCCCTCCTC (2064)

Mouse genes;

A43//NM\_007409//ADH1A// "class I alcohol dehydrogenase,  $\alpha$  subunit"

TGTGGTGTAAGCGTCGTCGTA (2065)

CCAATGCCCAGAACCTCTCCATGAAC (2066)

CGCCAAATATTGCTCCCTTC (2067)

A44//NM\_008030//FMO3//Flavin-containing Monooxygenase 3

CTTGCAGCCCCTACCAGTTC (2068)

CCCGGAACGCCATCCTAACACAGTG (2069)

TGACGACACGCGTCTTCATAG (2070)

A65//NM\_021564//FETUB//fetuin B

CTCGTCAAAGTCACCAAGGCTAT (2071)

CCATGTACCAAATCCCAGGCCAGCT (2072)

AATACCAACGGGCTCAGAGTCA (2073)

B25//NM\_016917//SLC11A3// "solute carrier family 11 (proton-coupled  
divalent metal ion transporters), member 3"

CTATTCTCAGGACTAGCCCAGCTT (2074)  
TCCAGGCATGAATACGGAGATCACACA (2075)  
CCTAGAACGGATATCTTCAAATGGA (2076)

A131//V00727//c-fos//cellular oncogene c-fos (complete sequence)

CCTGAAGAGGAAGAGAAACGGAG (2077)  
CGAAGGGAACGGAATAAGATGGCTGC (2078)  
CGATTCCGGCACTTGGC (2079)

[0232] The total RNAs extracted by the method described above were treated with DNase (Nippon Gene Co. , Ltd.). Then, the cDNAs prepared by reverse transcription were used as templates. The primer used was random hexamer (GIBCO BRL). A plasmid clone for each gene, which contained the nucleotide sequence region amplified with the pair of primers, was prepared for a standard curve to determine the copy number. A dilution series of the plasmid was used as templates in the PCR assay. The composition of the reaction solution used to monitor PCR amplification was the same as that shown in Table 39.

[0233] Furthermore, similar quantitative analyses for the  $\beta$ -actin gene and the glyceraldehyde-3-phosphate dehydrogenase (GAPDH) gene as internal standards for correction were carried out to correct the difference of cDNA concentration in a sample. The copy number of the gene of interest was determined by correcting based on the determined copy numbers for the genes.

[0234] The nucleotide sequences of primers and probes used in the assays for human and mouse  $\beta$ -actin, and human and mouse GAPDH, are the same as shown in Example 6 (human: SEQ ID Nos: 7 to 12) and Example 9 (mouse: SEQ ID NOs: 18 to 23). The expression levels (copy/ng RNA) of the respective genes corrected with the level of  $\beta$ -actin are shown in Figs 7 to 31 (altered in both human and mouse) and Figs 32 to 69 (altered in human). In the OVA-administered group, the respective genes showed significant variations in expression levels. Specifically, the expression levels of genes belonging to groups (A) and (B) were confirmed to be increased and decreased, respectively.

6. Determination of the localization of each mRNA in the lung of OVA antigen-exposed bronchial hypersensitivity model by in situ hybridization (hereinafter referred to as "ISH")

[0235] A32/IL-1R-1, A36/ADAM 8, A37/diubiquitin, A42/SDC1, A50/IGFBP3, and A129/CTSC were analyzed for the localization pattern. After perfusion fixation with 10% buffered neutral formalin, the pulmonary tissues were removed from three mice from the naive group and each of the other three groups (S-Sal group, Pred group and S-OVA group) 24 hours after the final exposure to the antigen. The tissues were fixed with 10% buffered neutral formalin, and then embedded in paraffin to prepare tissue blocks.

[0236] All paraffin blocks from the mouse lung samples were sliced into 3  $\mu$ m sections. Then, the sections were treated with hematoxylin for nuclear staining. Among them, sections exhibiting good tissue morphology were selected from a single individual each of the S-Sal group and S-OVA group for carrying out ISH. The nucleotide sequences of the ISH probes are shown in the following SEQ ID NOs:

CTSC (SEQ ID NO: 2080, 2081);

IL-1 receptor 1 (SEQ ID NO: 2082);

ADAM8 (SEQ ID NO: 2083);

Diubiquitin (SEQ ID NO: 2084);

SDC1 (SEQ ID NO: 2085) ;

and

IGFBP3 (SEQ ID NO: 2086) .

**[0237]** The paraffin sections of mouse lung tissues from the S-Sal group and the S-OVA group were rehydrated by deparaffinization (washed with water after treatment with xylene, 100%, 90%, 80%, and 70% alcohol). Then, the sections were treated with the ISH probe described above. After the staining, the sections were treated for nuclear staining. The conditions used for the ISH experiments are described below. The ISH result is shown in Table 158.

Probe concentration: 250 ng/ml

Hybridization temperature: 60°C

Duration of hybridization: 6 hours

Post-hybridization wash: 0.1x SSC/70°C /6 minutes/3 times

Coloring reagents: NBT/BCIP

Duration of color development: 7 hours

Table 114

| site                     | constituting cell                | A32: IL-1R-1 |       |       | A36: ADAM 8 |       |       | A37: diubiquitin |       |       | A42: SDC1 |       |       | A50: IGFBP3 |       |       | A129: CTSC |       |       |
|--------------------------|----------------------------------|--------------|-------|-------|-------------|-------|-------|------------------|-------|-------|-----------|-------|-------|-------------|-------|-------|------------|-------|-------|
|                          |                                  | Naïve        | S-Sal | S-OVA | Naïve       | S-Sal | S-OVA | Naïve            | S-Sal | S-OVA | Naïve     | S-Sal | S-OVA | Naïve       | S-Sal | S-OVA | Naïve      | S-Sal | S-OVA |
| bronchial branch         | epithelial cell                  | -            | -     | -     | -           | -     | -     | -                | -     | -     | -         | -     | -     | -           | -     | -     | ND         | -     | -     |
|                          | goblet cell                      | -            | -     | -     | -           | -     | ++    | -                | +     | ++    | -         | +     | +     | -           | +     | ++    | ND         | -     | -     |
|                          | lymphocyte                       | -            | -     | +     | -           | -     | -     | -                | -     | -     | -         | -     | -     | -           | -     | -     | ND         | -     | -     |
|                          | macrophage                       | -            | -     | ++    | -           | -     | -     | -                | -     | -     | -         | -     | -     | -           | -     | -     | ND         | -     | +     |
|                          | smooth muscle cell               | -            | -     | -     | -           | -     | -     | -                | -     | -     | -         | -     | -     | -           | -     | -     | ND         | -     | -     |
| bronchiole               | epithelial cell                  | -            | -     | -     | -           | -     | -     | -                | -     | -     | -         | -     | -     | -           | -     | -     | ND         | -     | -     |
|                          | Clara cell                       | -            | -     | -     | -           | -     | -     | -                | +     | +     | -         | +     | +     | -           | -     | -     | ND         | -     | -     |
|                          | goblet cell                      | -            | -     | -     | -           | -     | -     | -                | +     | +     | -         | +     | +     | -           | -     | -     | ND         | -     | -     |
|                          | lymphocyte                       | -            | -     | +     | -           | -     | -     | -                | -     | -     | -         | -     | -     | -           | -     | -     | ND         | -     | -     |
|                          | macrophage                       | -            | -     | ++    | -           | -     | -     | -                | -     | -     | -         | -     | -     | -           | -     | -     | ND         | -     | +     |
| alveolus (alveolar duct) | smooth muscle cell               | -            | -     | -     | -           | -     | -     | -                | -     | -     | -         | -     | -     | -           | -     | -     | ND         | -     | -     |
|                          | type I alveolar epithelial cell  | -            | -     | -     | -           | -     | -     | -                | -     | -     | -         | -     | -     | -           | -     | -     | ND         | -     | -     |
|                          | type II alveolar epithelial cell | -            | -     | -     | -           | -     | ++    | -                | -     | ++    | -         | -     | -     | +           | +     | ++    | ND         | -     | -     |
|                          | macrophage                       | -            | -     | ++    | -           | -     | -     | -                | -     | -     | -         | -     | -     | -           | -     | -     | ND         | -     | +     |
|                          | alveolar macrophage              | -            | -     | -     | -           | -     | -     | -                | -     | -     | -         | -     | -     | -           | -     | -     | ND         | -     | +     |
| endothelial cell         | endothelial cell                 | -            | -     | -     | -           | -     | -     | -                | -     | -     | -         | -     | -     | -           | -     | -     | ND         | -     | -     |
|                          | fibroblast                       | -            | -     | -     | -           | -     | -     | -                | -     | -     | -         | -     | -     | -           | -     | -     | ND         | -     | -     |
|                          | invasive cell                    | x            | x     | -     | x           | x     | -     | x                | x     | ++    | x         | x     | +     | x           | +     | ++    | ND         | x     | -     |

x : invasive cell  
 \* : only plasma cells were stained

## Claims

1. A method of testing for bronchial asthma or chronic obstructive pulmonary disease, which comprises the steps of:

- (1) determining the expression level of a marker gene in a biological sample from a subject;  
 (2) comparing the expression level determined in step (1) with the expression level of the marker gene in a biological sample from a healthy subject; and  
 (3) judging the subject to have bronchial asthma or chronic obstructive pulmonary disease when the result of the comparison in step (2) indicates that (i) the expression level of the marker gene in the subject is higher than that in the control when the marker gene is a gene according to (a) or (ii) when the expression level of the marker gene in the subject is lower than that in the control when said marker gene is a gene according to (b);

wherein the marker gene is any one selected from the group according to (a) or (b):

- (a) a group of genes whose expression levels increase when respiratory epithelial cells are stimulated with interleukin-13, and comprise any one of the nucleotide sequences of SEQ ID NOs: 25 to 310;  
 (b) a group of genes whose expression levels decrease when respiratory epithelial cells are stimulated with interleukin-13, and comprise any one of the nucleotide sequences of SEQ ID NOs: 311 to 547.

2. The testing method according to claim 1, wherein the biological sample is a respiratory epithelial cell.

3. The testing method according to claim 1, wherein the gene expression level is measured by PCR analysis of the cDNA.

4. The testing method according to claim 1, wherein the gene expression level is measured by detecting the protein encoded by the marker gene.

5. A reagent for testing for bronchial asthma or chronic obstructive pulmonary disease, wherein the reagent comprises a polynucleotide comprising the nucleotide sequence of a marker gene, or an oligonucleotide having at least 15 nucleotides and comprising a nucleotide sequence complementary to the complementary strand of the nucleotide sequence of the marker gene, and wherein, the marker gene is any one selected from the group according to (a) or (b) in claim 1.

6. A reagent for testing for bronchial asthma or chronic obstructive pulmonary disease, wherein the reagent comprises an antibody that recognizes a protein encoded by a marker gene, and wherein the marker gene is any one selected from the group according to (a) or (b) in claim 1.

7. A method of screening for a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease, wherein the marker gene is any one selected from the group according to (a) or (b) in claim 1, and wherein the method comprises the steps of:

- (1) contacting a candidate compound with a cell expressing the marker gene;  
 (2) measuring the expression level of said gene; and  
 (3) selecting a compound that decreases the expression level of a marker gene belonging to group (a) or increases the expression level of a marker gene belonging to group (b), as compared to that in a control with which the compound has not been contacted.

8. The method according to claim 7, wherein the cell is a respiratory epithelial cell or a goblet cell.

9. The method according to claim 8, which comprises the step of culturing the respiratory epithelial cells under the condition in which culture medium is removed from the apical side of said cells and the culture medium is supplied from the basolateral side of the cells.

10. A kit for screening for a candidate compound for a therapeutic agent to treat bronchial asthma or chronic obstructive pulmonary disease, wherein the kit comprises (i) a polynucleotide comprising the nucleotide sequence of a marker gene, or an oligonucleotide having at least 15 nucleotides and comprising a nucleotide sequence that is complementary to the complementary strand of the polynucleotide, and (ii) a cell expressing the marker gene, and wherein the marker gene is any one selected from the group according to (a) or (b) in claim 1.

11. A kit for screening for a candidate compound for a therapeutic agent to treat bronchial asthma or chronic obstructive pulmonary disease, wherein the kit comprises (i) an antibody that recognize a protein encoded by a marker gene, and (ii) a cell expressing the marker gene, wherein the marker gene is selected from the group according to (a) or (b) in claim 1.

12. The kit according to claim 10 or 11, which further comprises a cell-supporting material to culture respiratory epithelial cells under conditions in which the culture medium is supplied from the basolateral side of the cells.

13. The kit according to claim 12, which further comprises respiratory epithelial cells.

14. An animal model for bronchial asthma or chronic obstructive pulmonary disease, wherein the animal is a transgenic nonhuman vertebrate wherein the expression level of a marker gene, or a gene functionally equivalent to the marker gene, has been increased in the respiratory tissue, wherein the marker gene is any one selected from the group according to (a) in claim 1 or the following (A):

(A) a group of genes whose expression levels increase in the lung of an animal model for bronchial hypersensitivity induced by an exposure to the ovalbumin antigen, wherein the genes comprise any one of the nucleotide sequences of SEQ ID NOs: 954 to 1174.

15. The animal model according to claim 14, wherein the nonhuman vertebrate is a mouse.

16. An animal model for bronchial asthma or chronic obstructive pulmonary disease, wherein the animal is a transgenic nonhuman vertebrate wherein the expression level of a marker gene, or a gene functionally equivalent to the marker gene, has been decreased in the respiratory tissue, wherein the marker gene is any one selected from the group according to (b) in claim 1 or the following (B):

(B) a group of genes whose expression levels decrease in the lung of an animal model for bronchial hypersensitivity induced by an exposure to the ovalbumin antigen, wherein the genes comprise any one of the nucleotide sequences of SEQ ID NOs: 1376 to 1515.

17. The animal model according to claim 16, wherein the nonhuman vertebrate is a mouse.

18. A method for producing an animal model for bronchial asthma or chronic obstructive pulmonary disease, which comprises the step of administering to a mouse any one of (i) to (iv):

(i) a polynucleotide comprising the nucleotide sequence constituting any one of the genes selected from the gene group according to (A) in claim 14;

(ii) a protein encoded by a polynucleotide comprising the nucleotide sequence constituting any one of the genes selected from the gene group according to (A) in claim 14;

(iii) an antisense nucleic acid of a polynucleotide comprising the nucleotide sequence constituting any one of the genes selected from the gene group according to (B) in claim 16, a ribozyme, or a polynucleotide that suppresses the expression of a gene through an RNAi (RNA interference) effect; and

(iv) an antibody that binds to a protein encoded by a polynucleotide comprising the nucleotide sequence constituting any one of the genes selected from the gene group according to (B) in claim 16, or a fragment comprising an antigen-binding region thereof.

19. An inducer that induces bronchial asthma in a mouse, wherein said inducer comprises as an active ingredient any one of (i) to (iv) in claim 18.

20. A method of screening for a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease comprising the steps of:

(1) administering a candidate compound to an animal subject,

(2) assaying the expression level of the marker gene in a biological sample obtained from the animal subject, and

(3) selecting a compound that decreases the expression level of a marker gene belonging to group (a) or (A), or a compound that increases the expression level of a marker gene belonging to group (b) or (B), as compared to that in a control with which the candidate compound has not been contacted,

wherein the marker gene is any one selected from the group consisting of (a) or (b) in claim 1, (A) in claim 14, and (B) in claim 16, or a gene functionally equivalent to said marker gene.

21. A method of screening for a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease comprising the steps of:

(1) contacting a candidate compound with a cell into which a vector has been introduced, wherein the vector comprises a transcriptional regulatory region of a marker gene and a reporter gene that is expressed under the control of the transcriptional regulatory region,  
 (2) measuring the activity of the reporter gene, and  
 (3) selecting a compound that decreases the expression level of the reporter gene when the marker gene belongs to group (a), or a compound that increases the expression level of the reporter gene when the marker gene belongs to group (b), as compared to that in a control with which the candidate compound has not been contacted,

wherein the marker gene is any one selected from the group according to (a) or (b) in claim 1, or a gene functionally equivalent to the marker gene.

22. A method of screening for a therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease comprising the steps of:

(1) contacting a candidate compound with a protein encoded by a marker gene,  
 (2) measuring the activity of the protein, and  
 (3) selecting a compound that decreases the activity when the marker gene belongs to group (a), or a compound that increases the activity when the marker gene belongs to the group (b), as compared to that in a control where the candidate compound has not been contacted,

wherein the marker gene is any one selected from the group according to (a) or (b) in claim 1, or a gene functionally equivalent to the marker gene.

23. A therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease, which comprises as an active ingredient a compound being obtainable by any one of the screening methods according to claims 7, 20, 21, and 22.

24. A therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease, which comprises as an active ingredient a marker gene or an antisense nucleic acid corresponding to a portion of the marker gene, a ribozyme, or a polynucleotide that suppresses the expression of the gene through an RNAi effect, wherein the marker gene is any one selected from the group according to (a) in claim 1.

25. A therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease, which comprises as an active ingredient an antibody recognizing a protein encoded by a marker gene, wherein the marker gene is any one selected from the group according to (a) in claim 1.

26. A therapeutic agent for bronchial asthma or chronic obstructive pulmonary disease, which comprises as an active ingredient a marker gene, or a protein encoded by a marker gene, wherein the marker gene is any one selected from the group according to (b) in claim 1.

27. A DNA chip for testing for bronchial asthma or a chronic obstructive pulmonary disease, on which a probe has been immobilized to assay a marker gene, and wherein the marker gene comprises at least a single type of gene selected from group (a) and (b) in claim 1.



Fig. 1

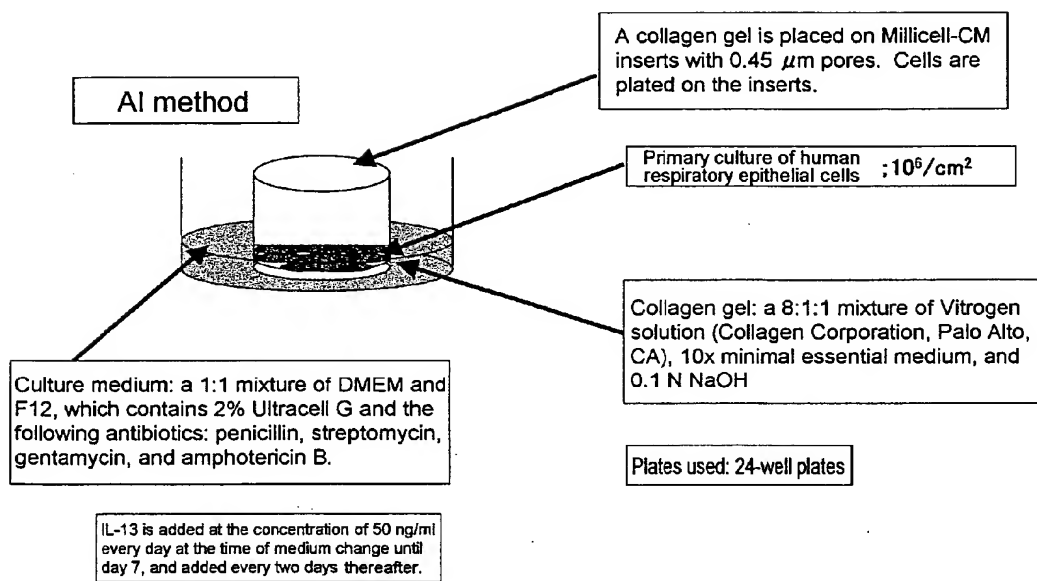


Fig. 2

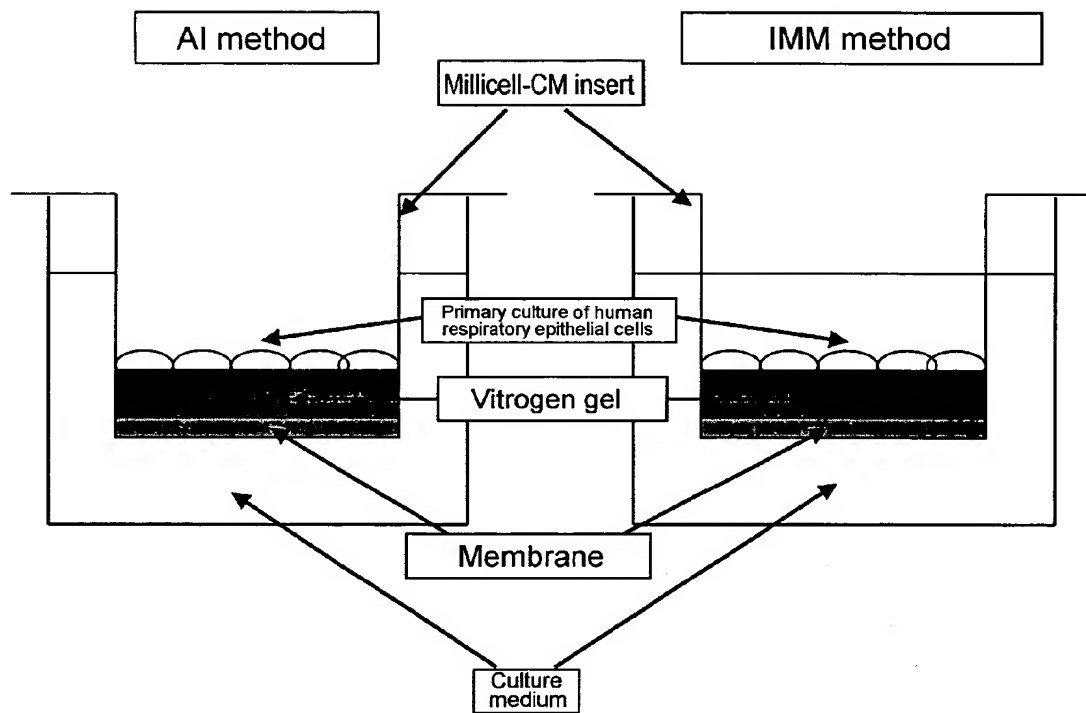


Fig. 3

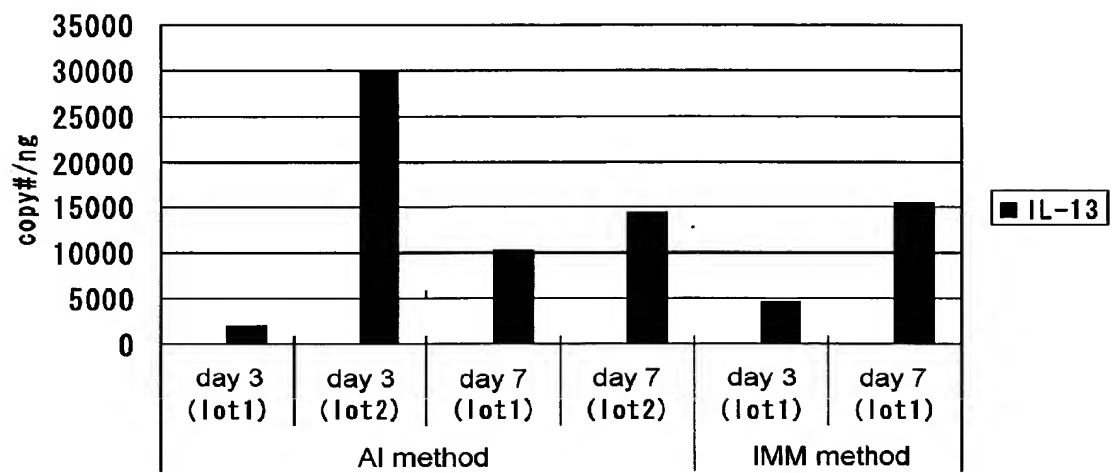


Fig. 4

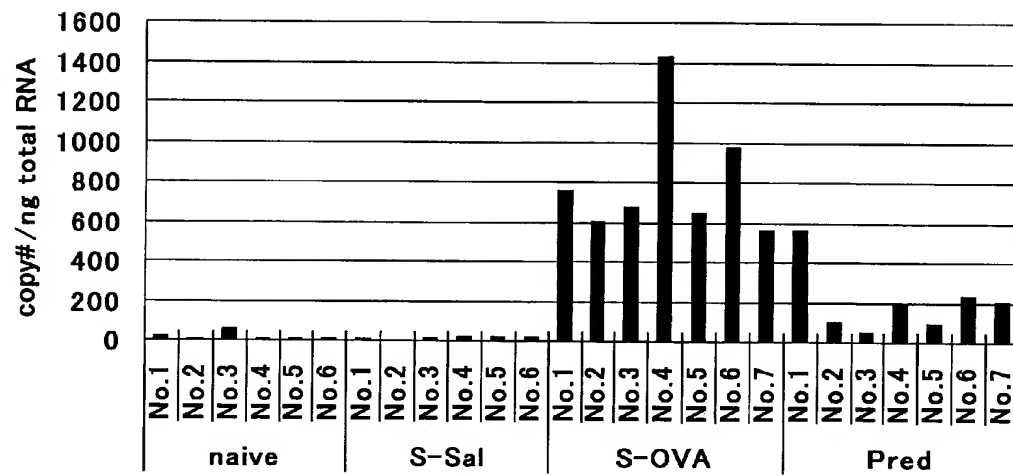


Fig. 5

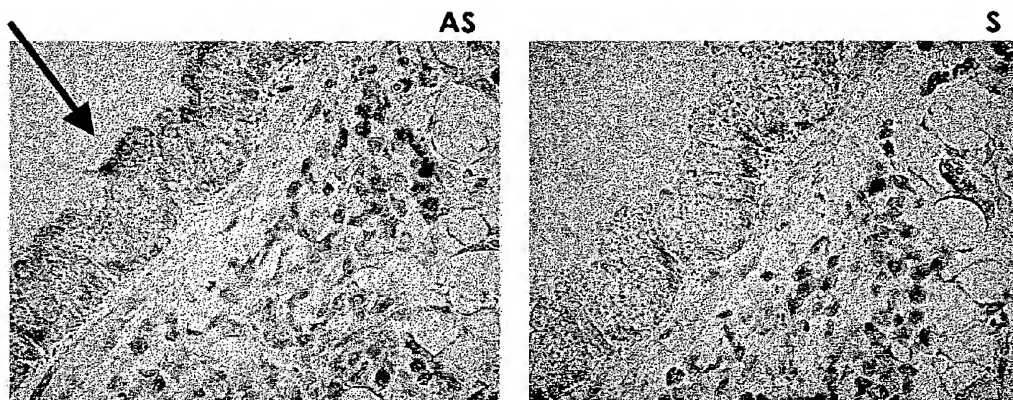


Fig. 6

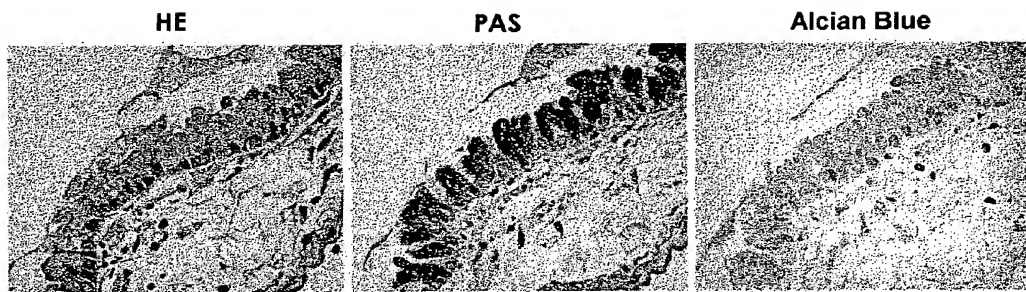


Fig. 7

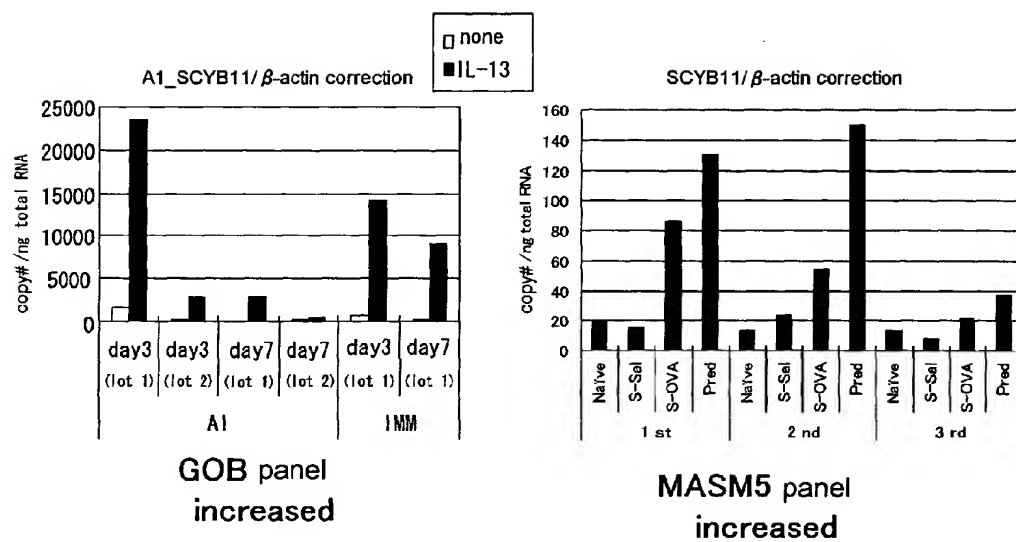


Fig. 8

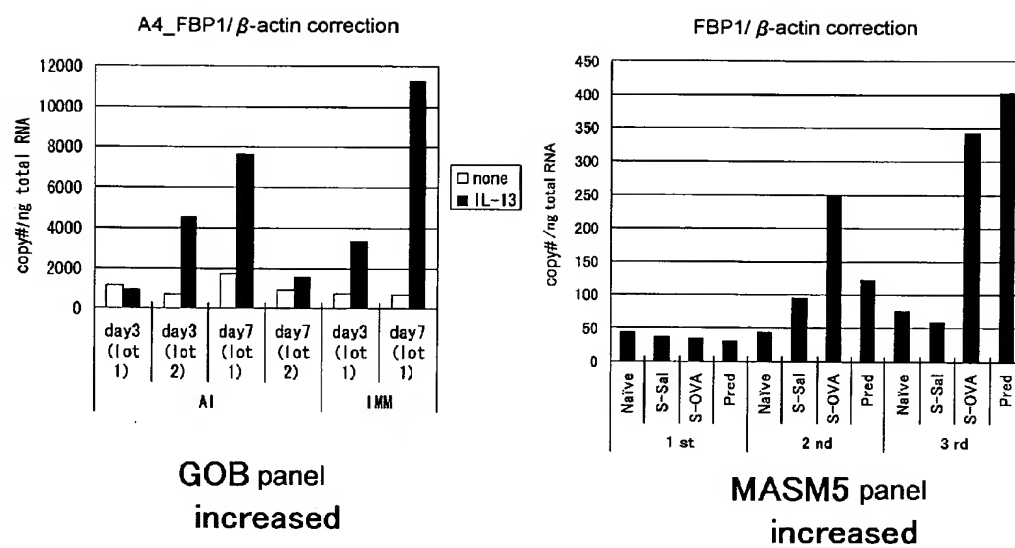




Fig. 9

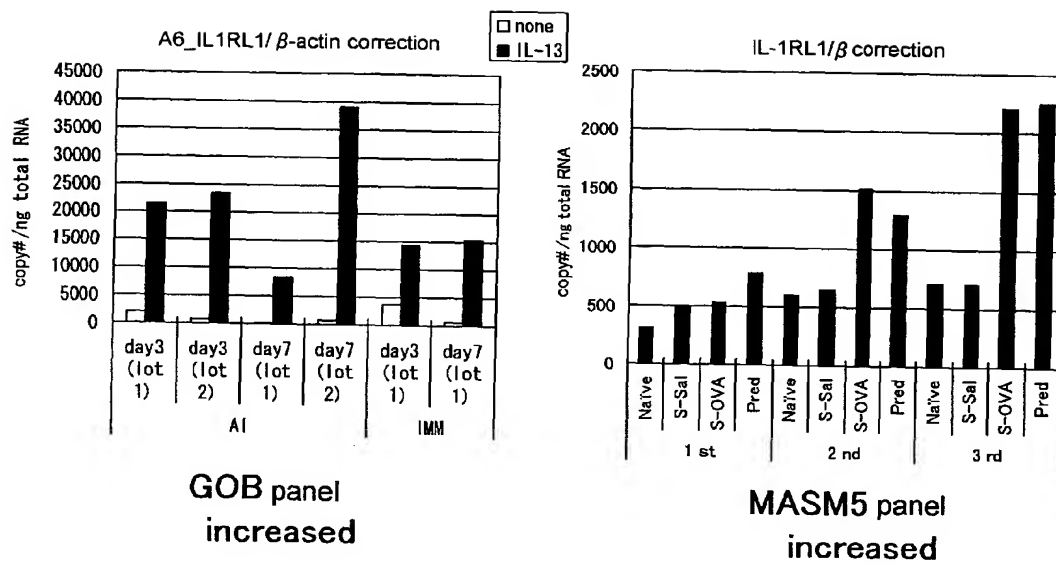


Fig. 10

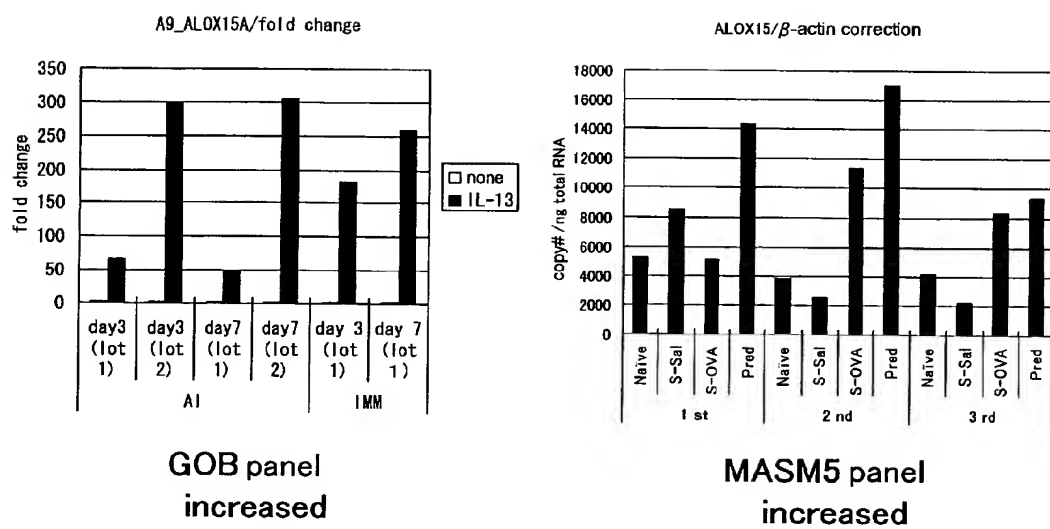


Fig. 11

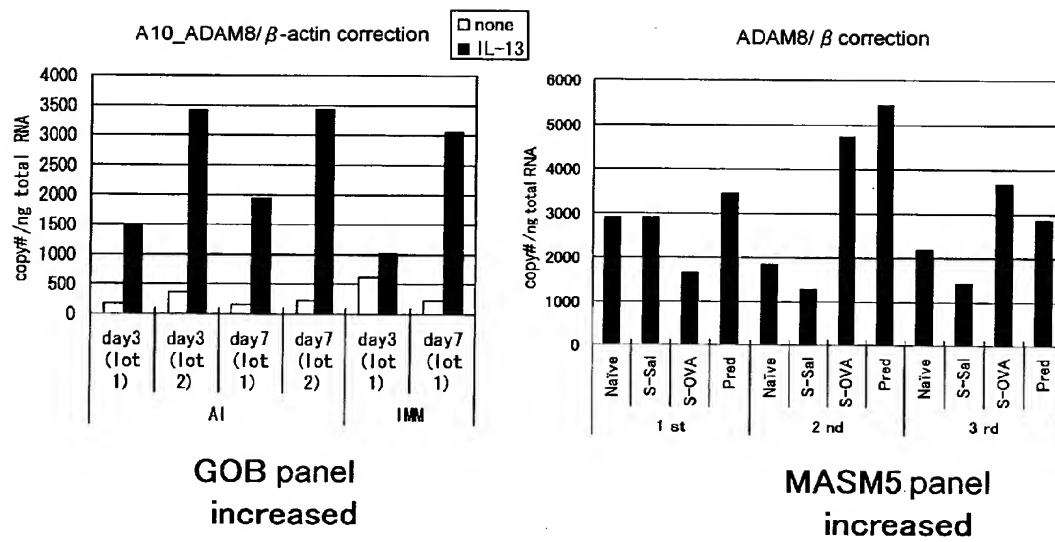


Fig. 12

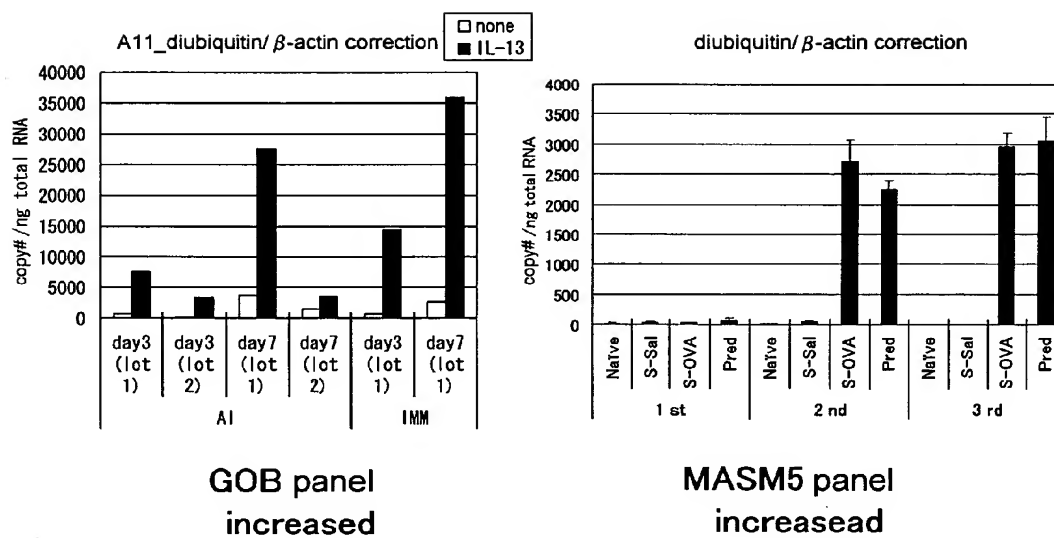


Fig. 13

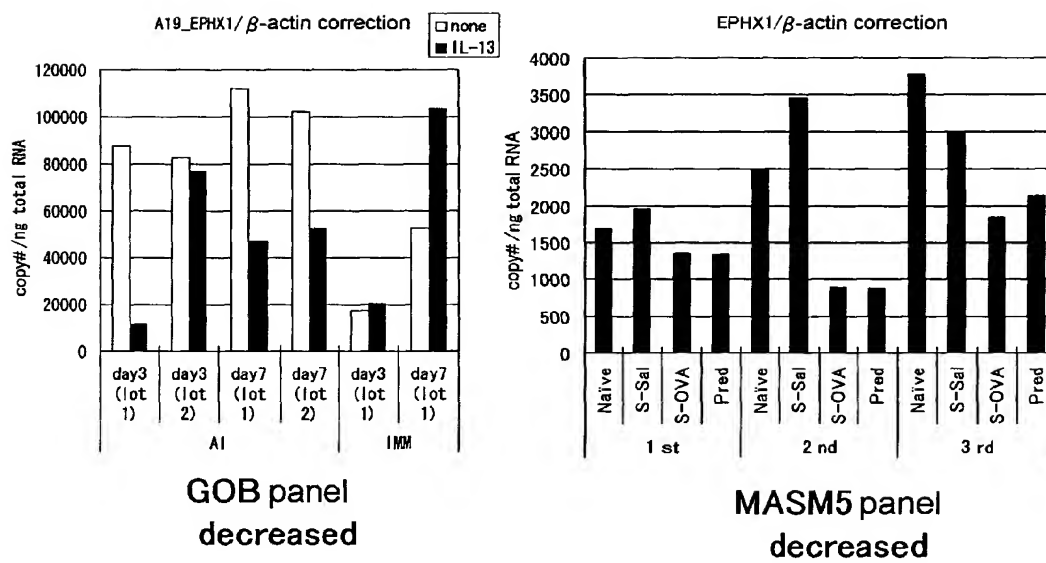


Fig. 14

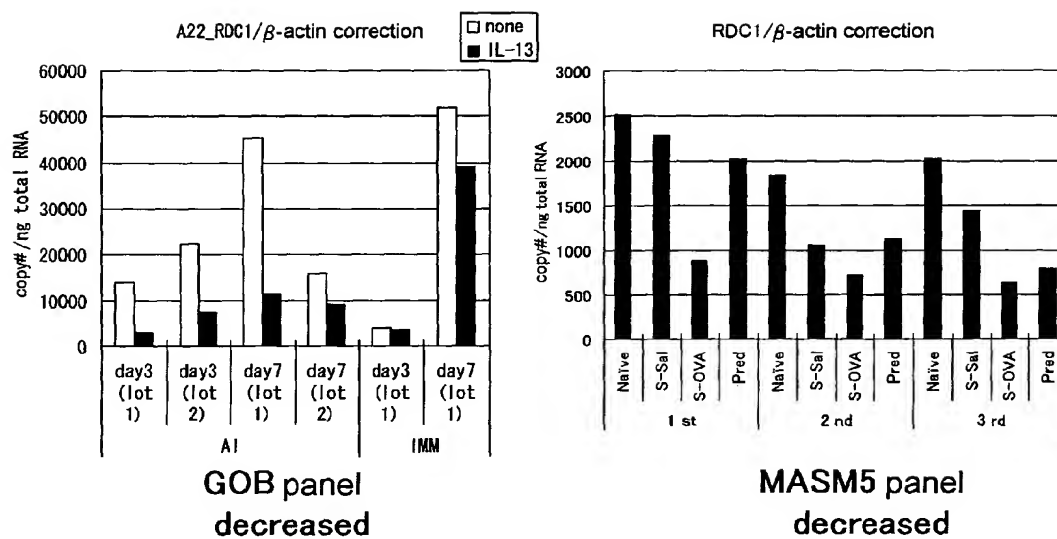


Fig. 15

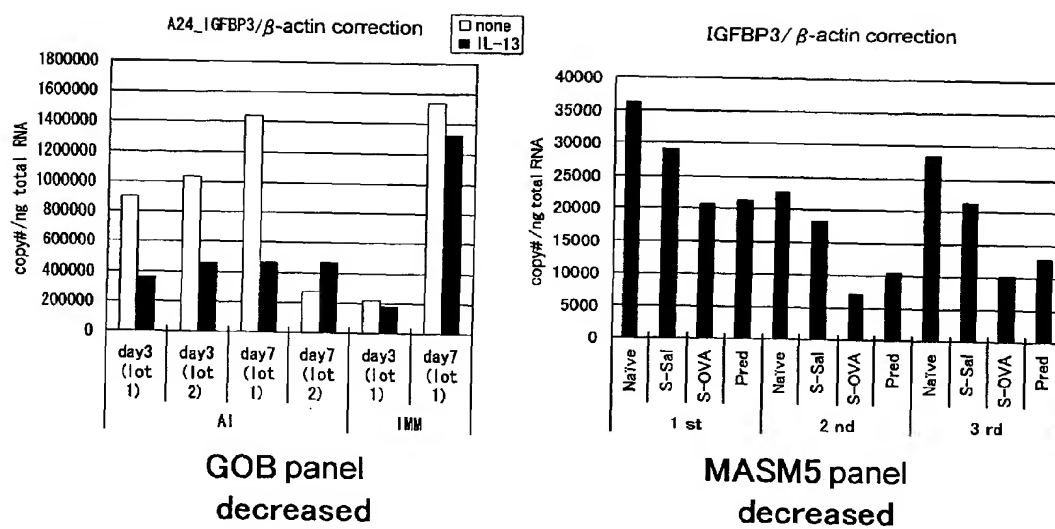


Fig. 16

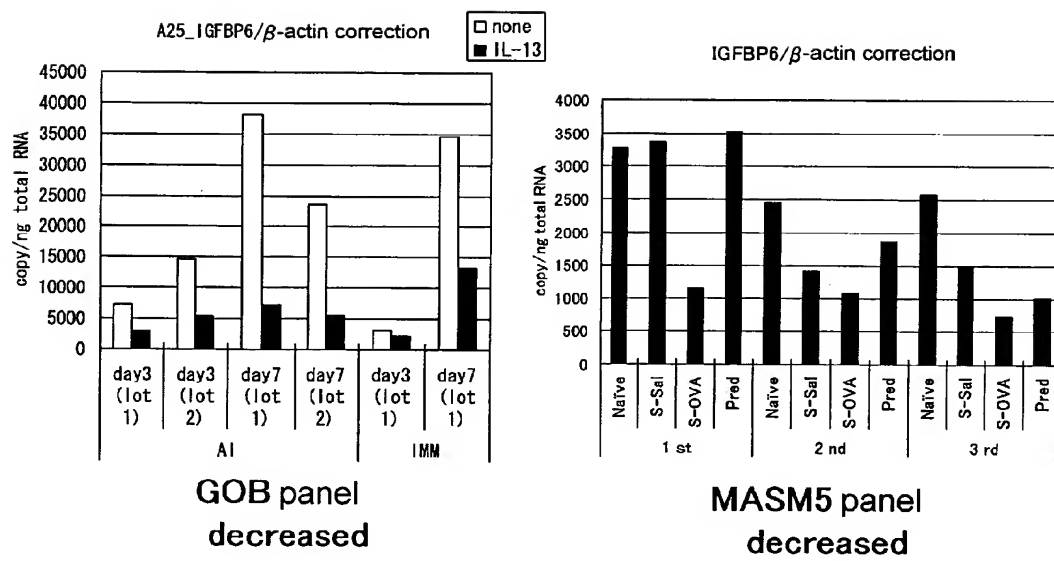




Fig. 17

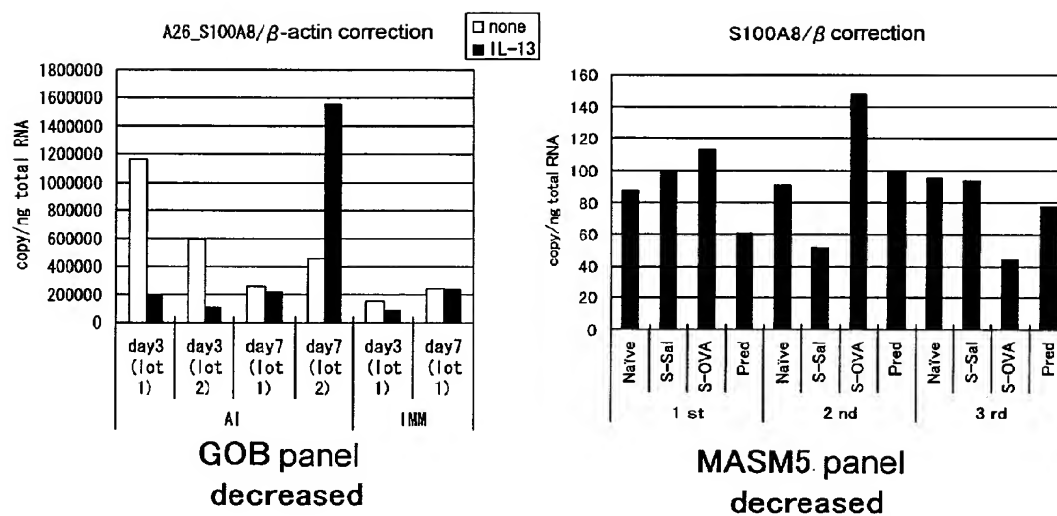


Fig. 18

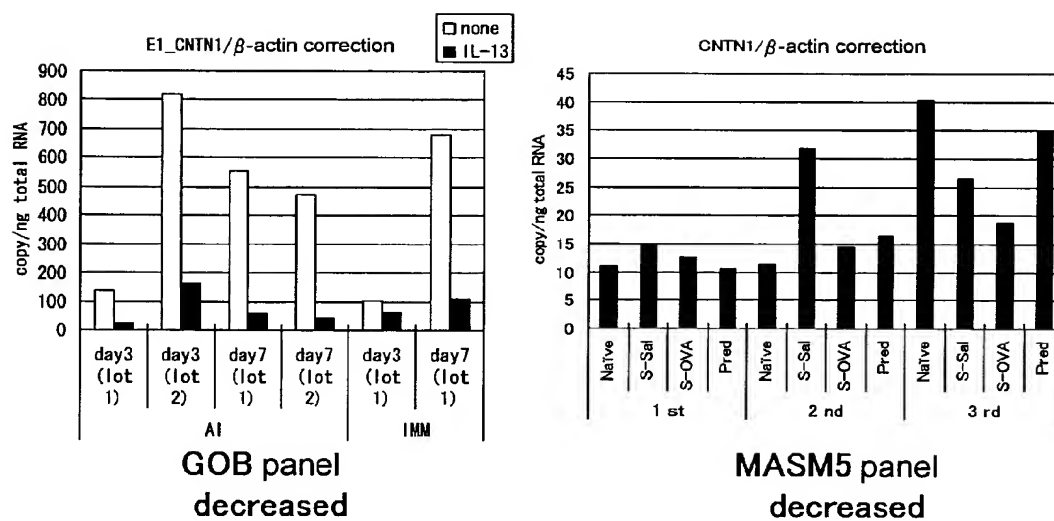


Fig. 19

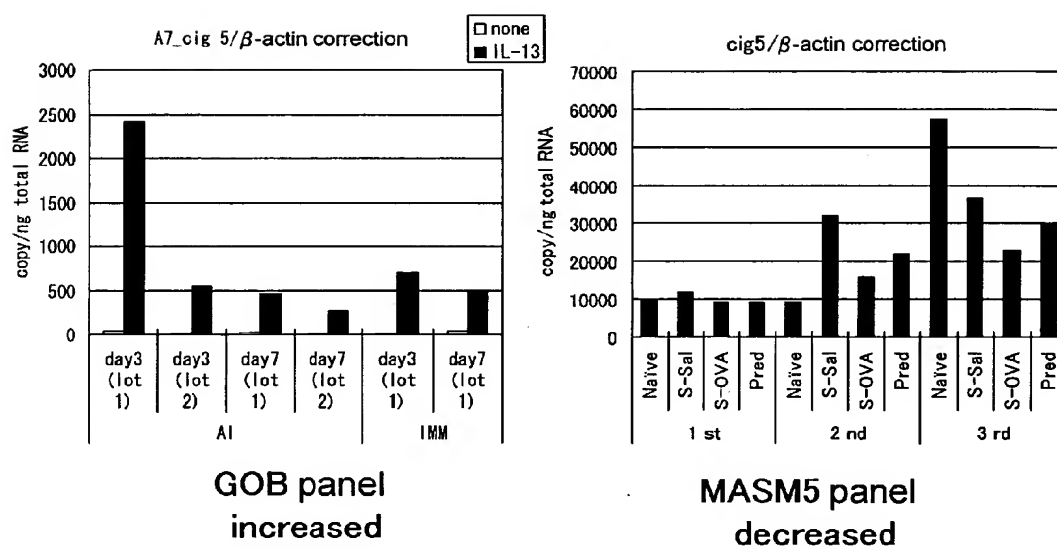


Fig. 20

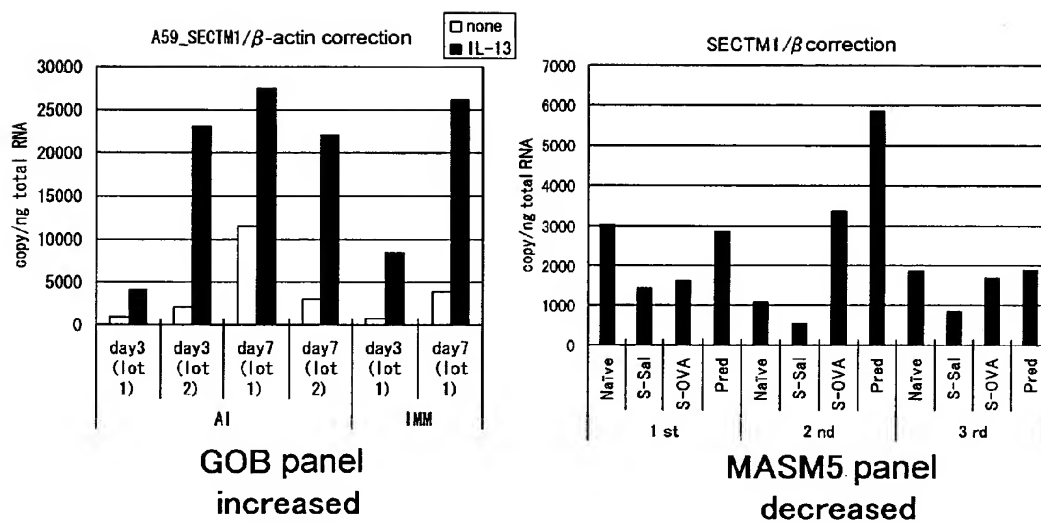


Fig. 21

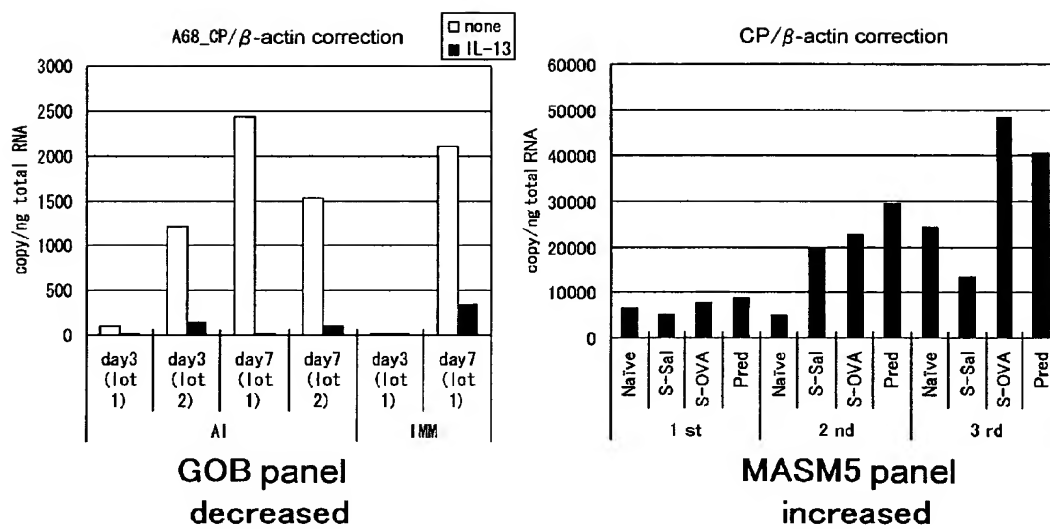


Fig. 22

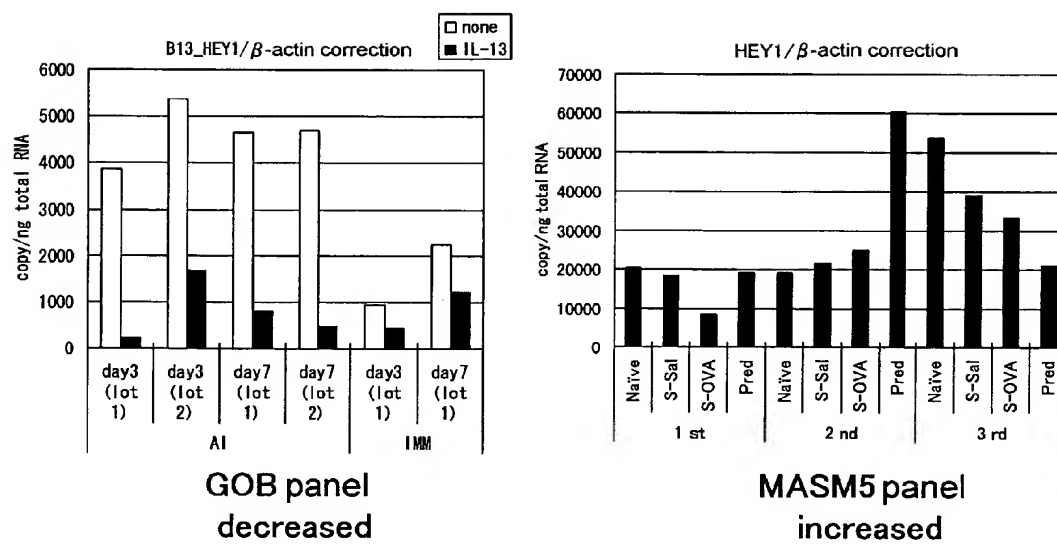


Fig. 23

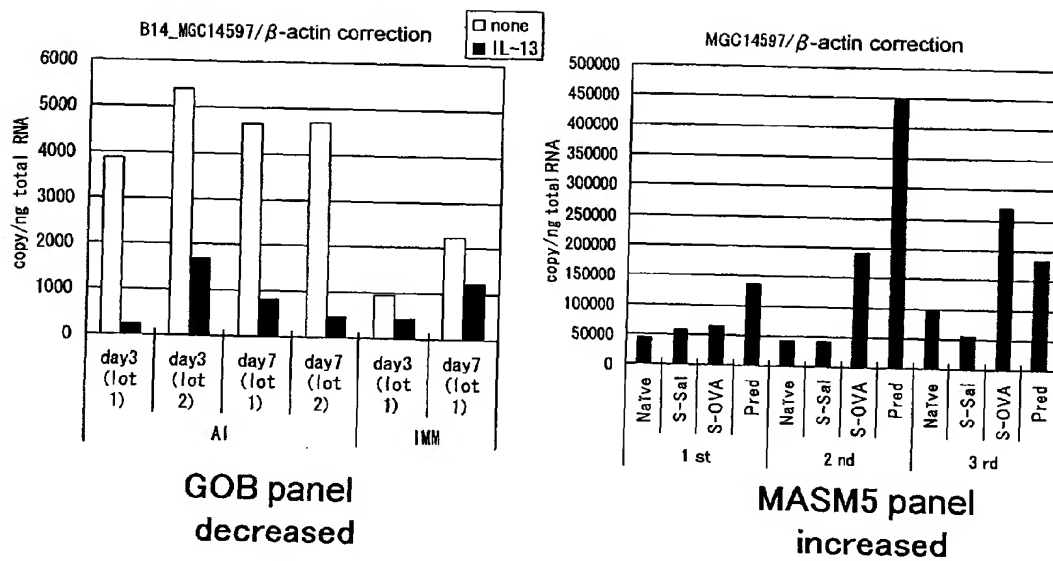


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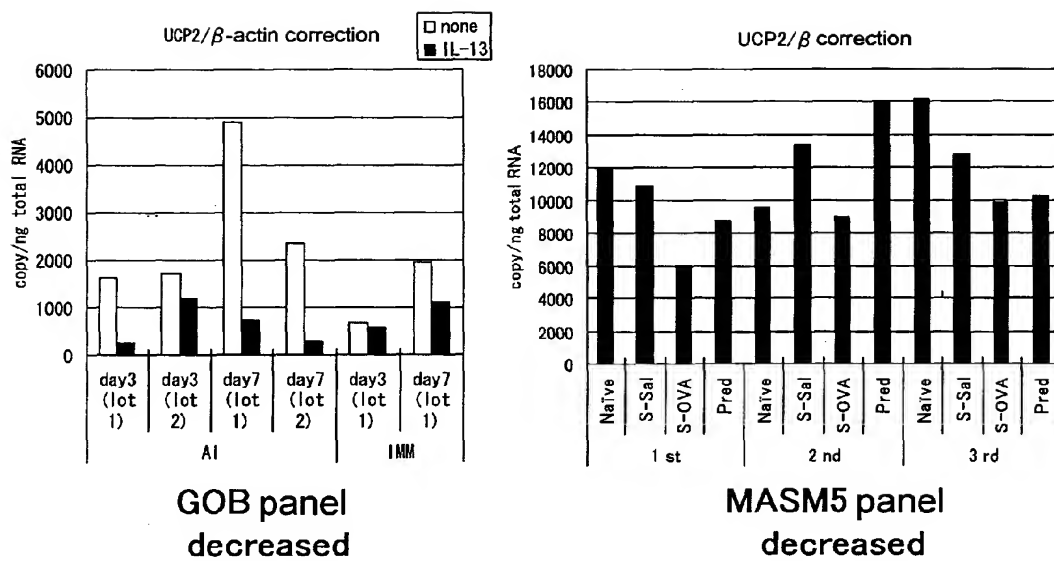




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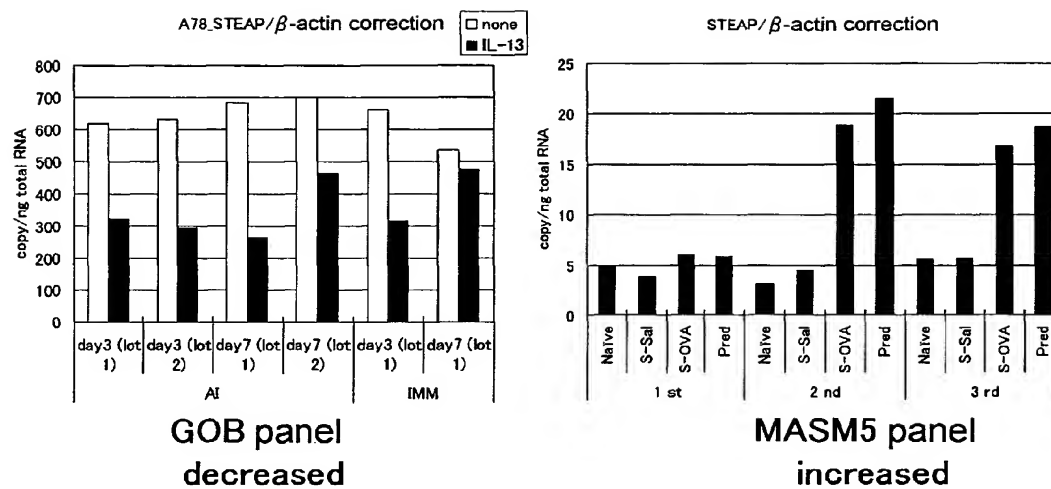


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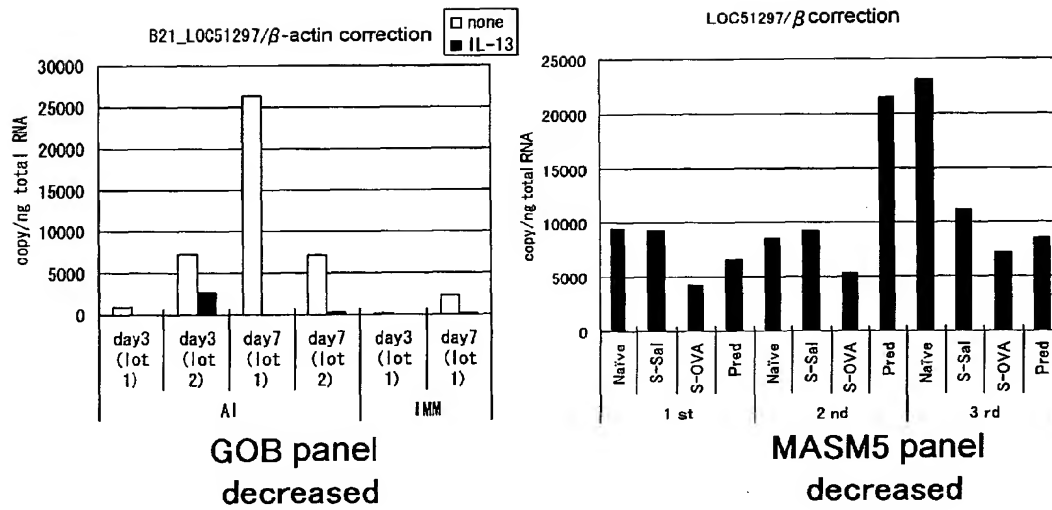


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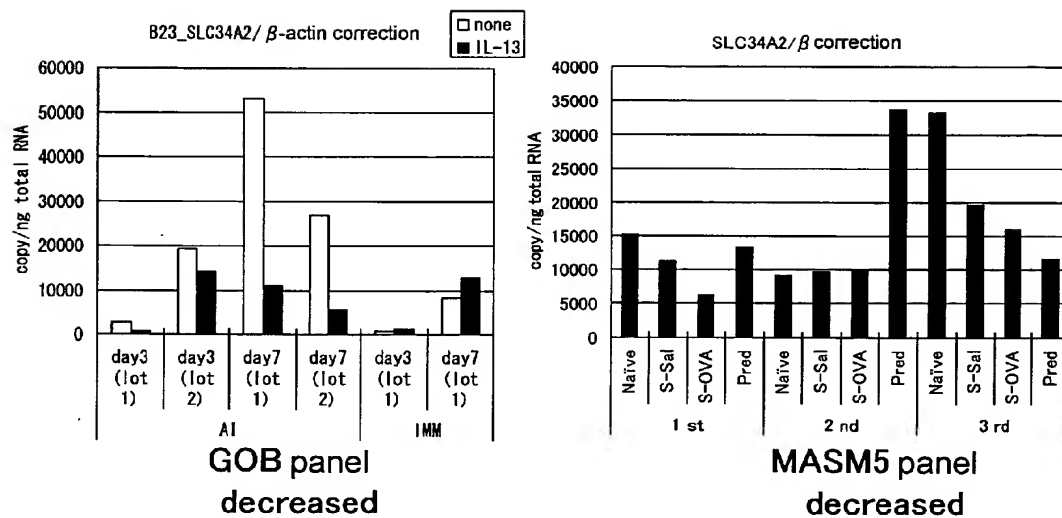


Fig. 28

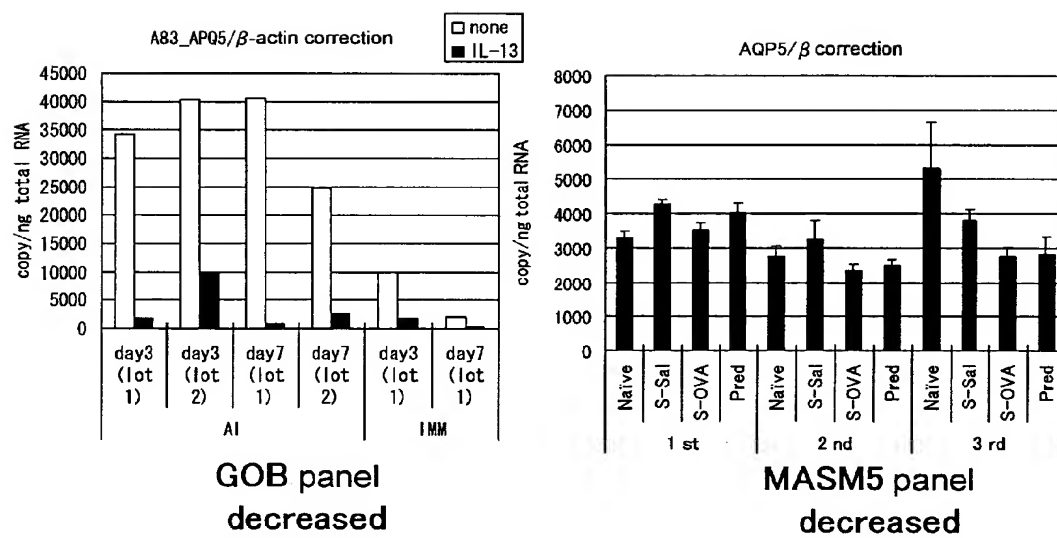


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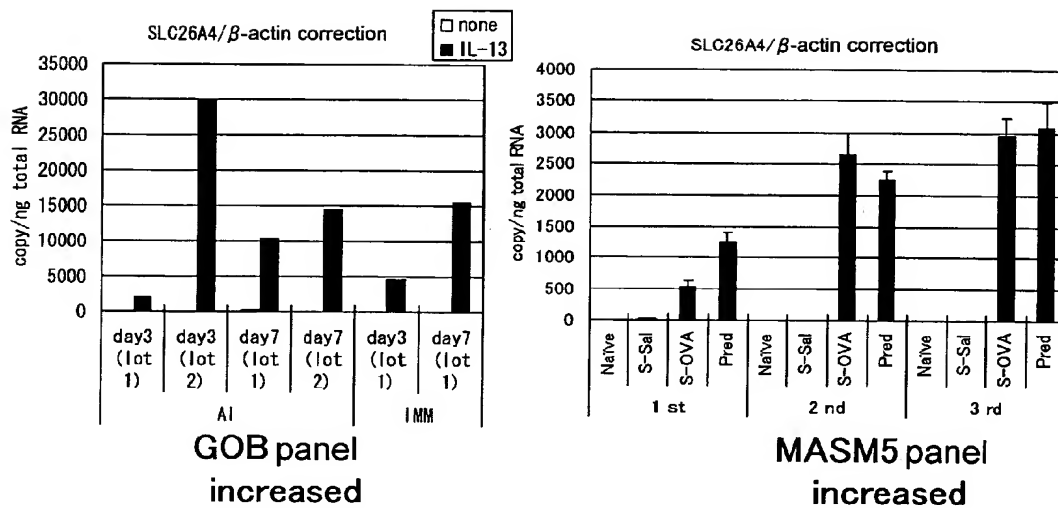


Fig. 30

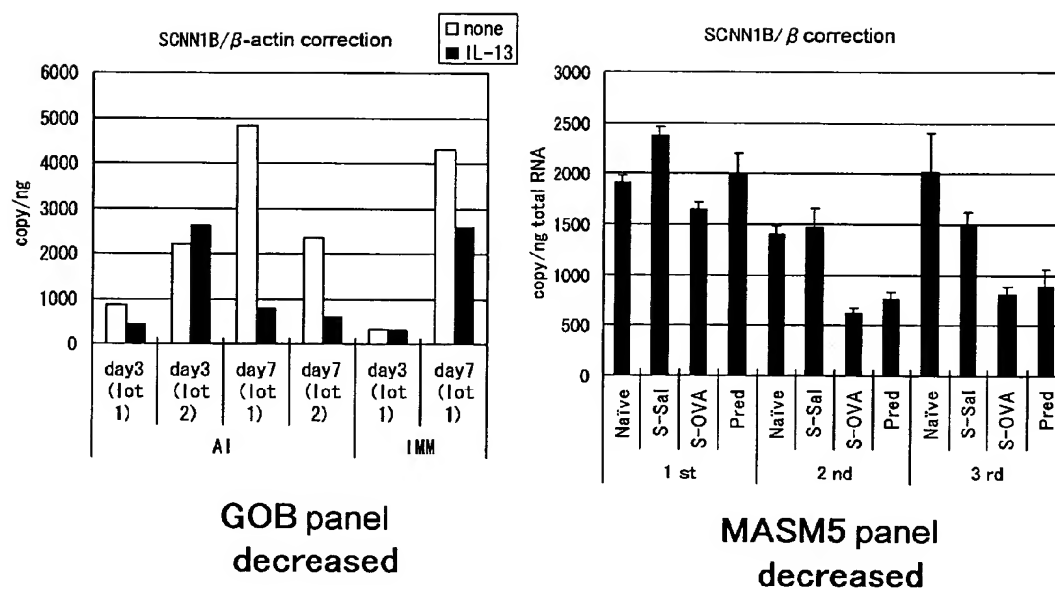


Fig. 31

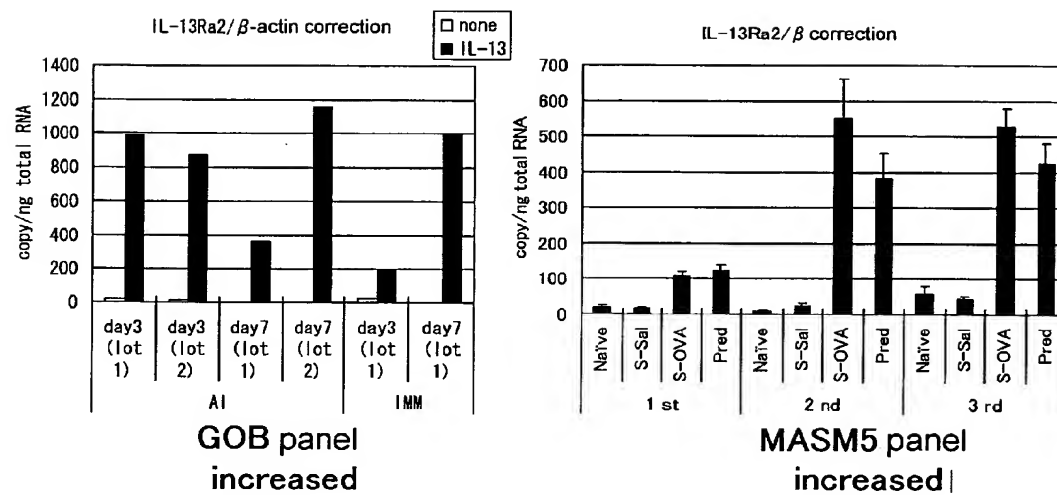


Fig. 32

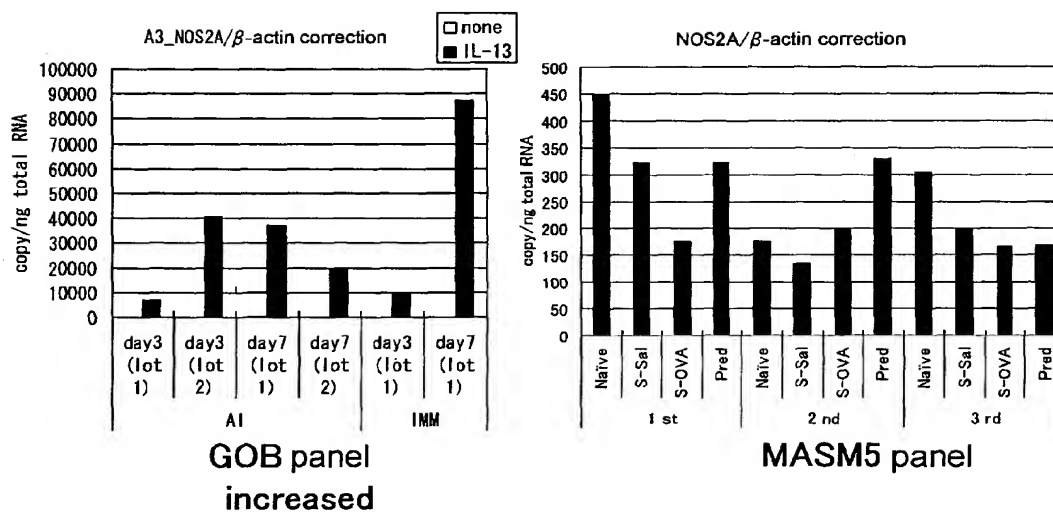




Fig. 33

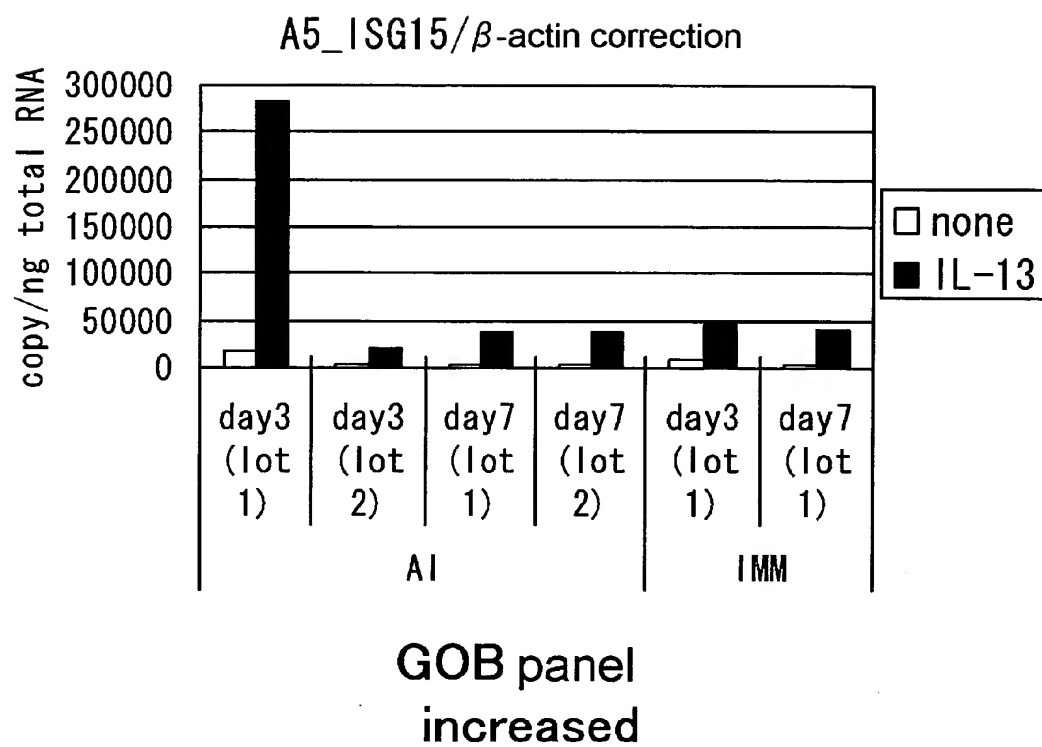


Fig. 34

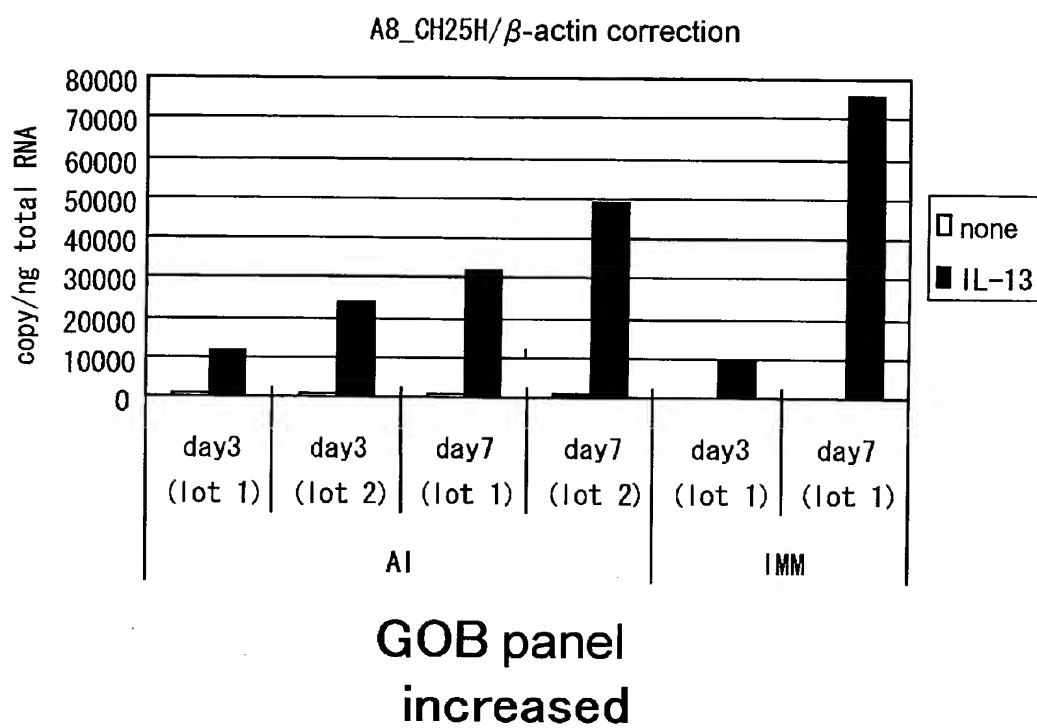


Fig. 35

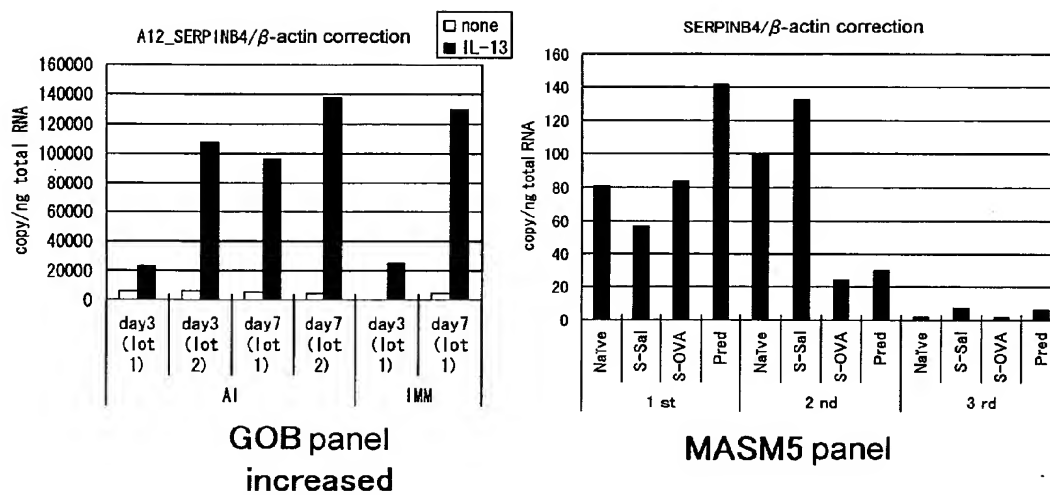


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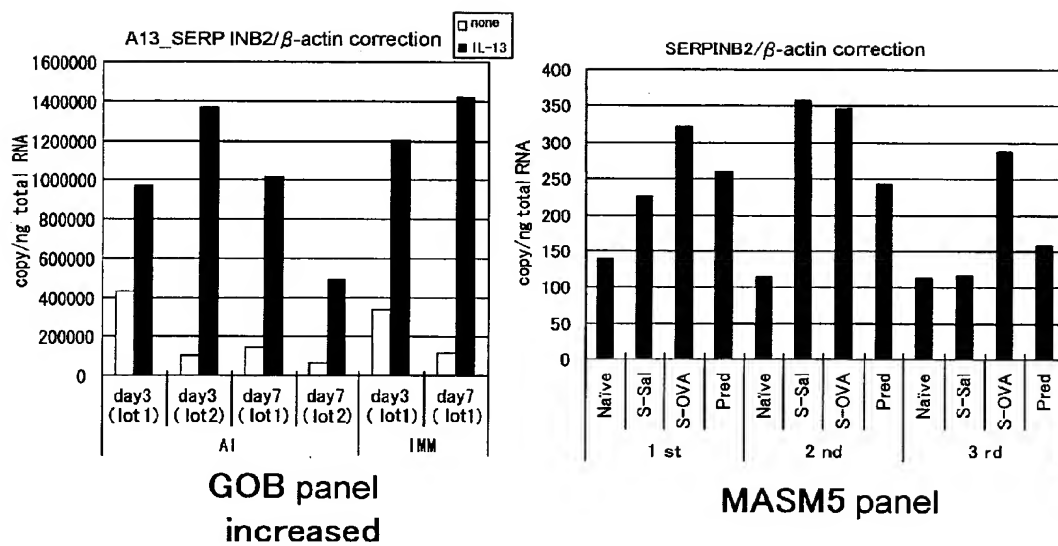


Fig. 37

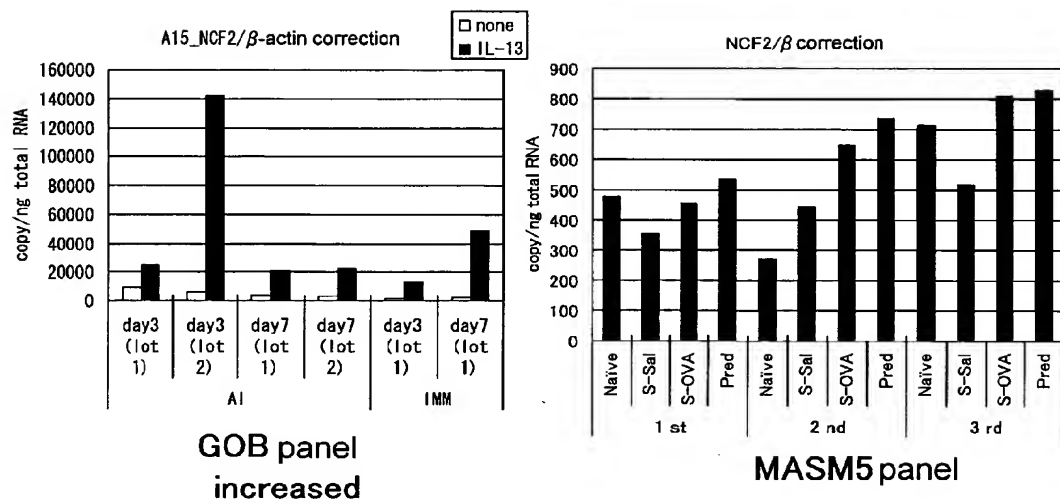


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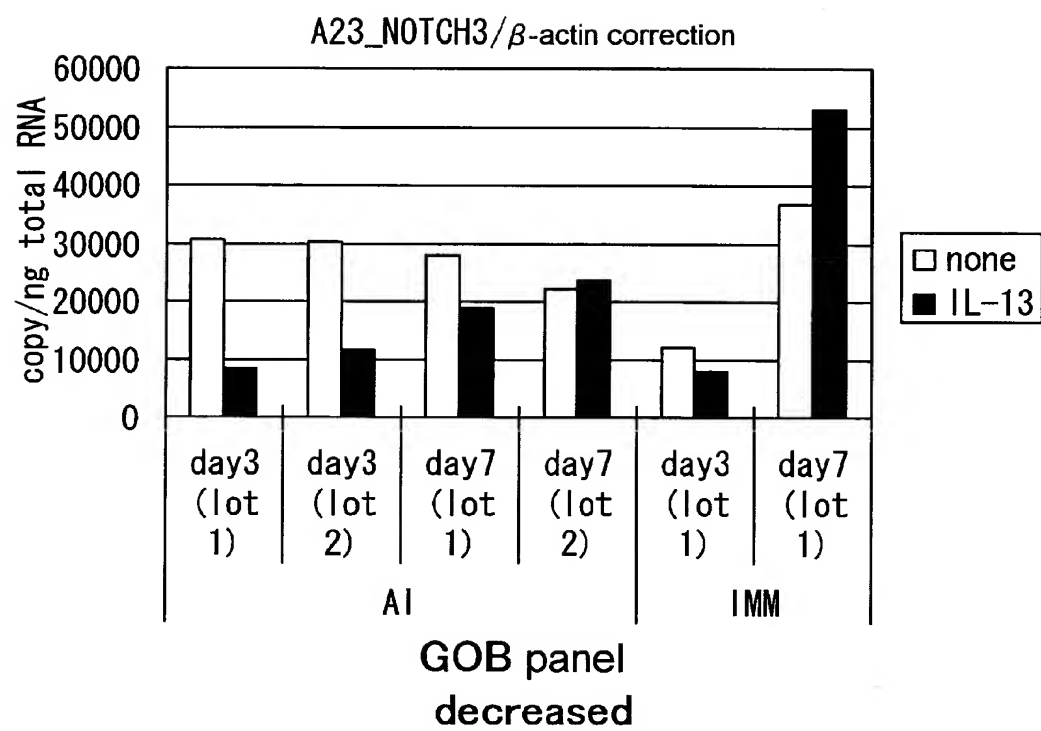


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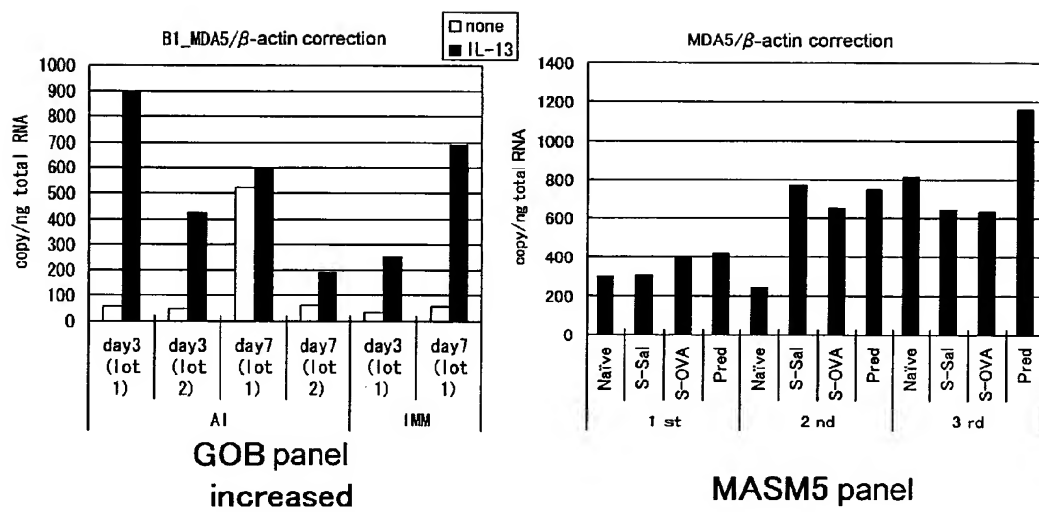


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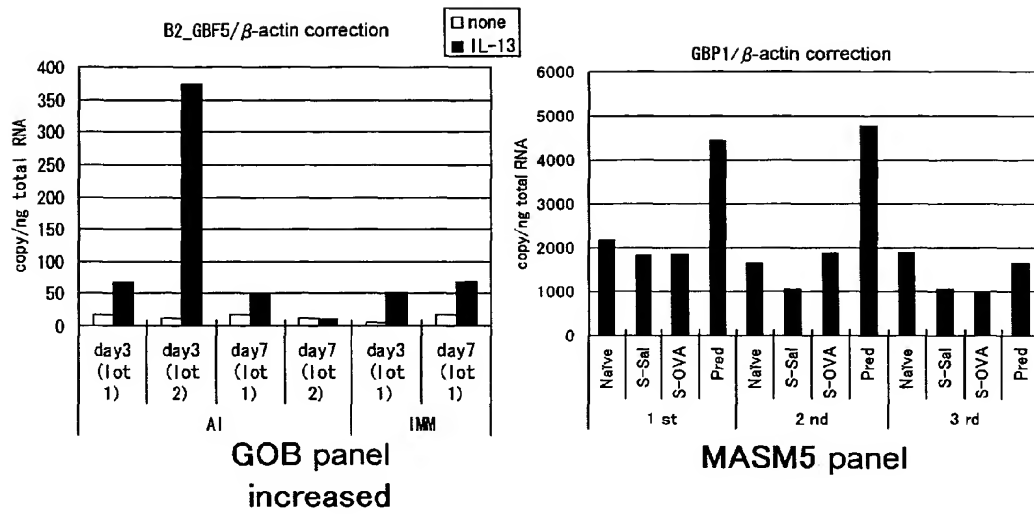




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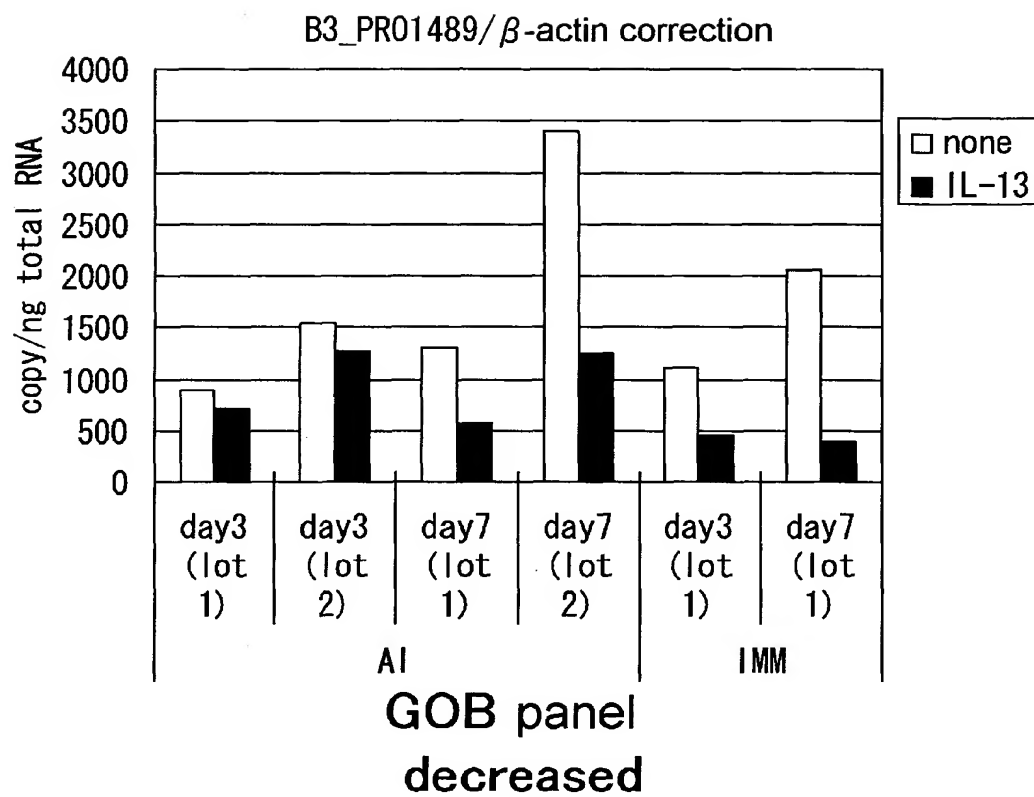


Fig. 42

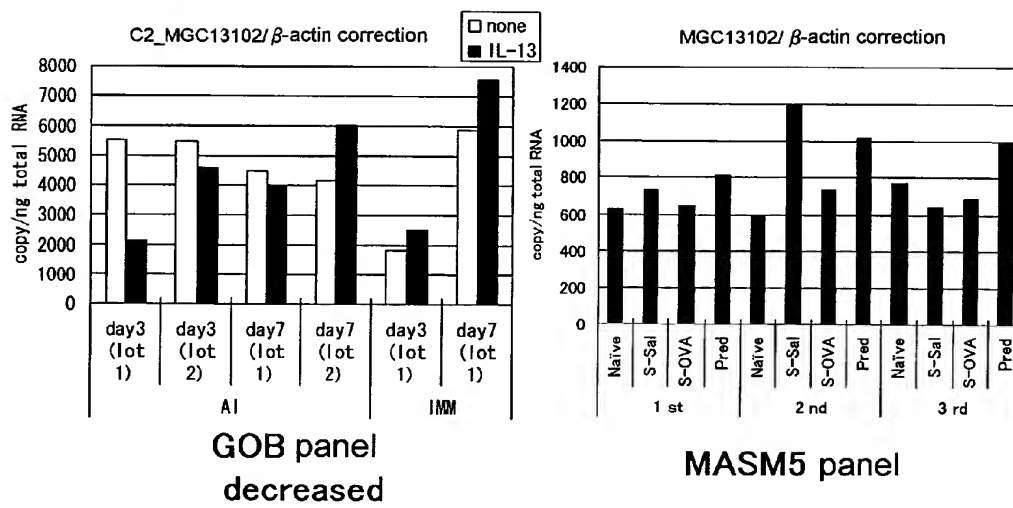


Fig. 43

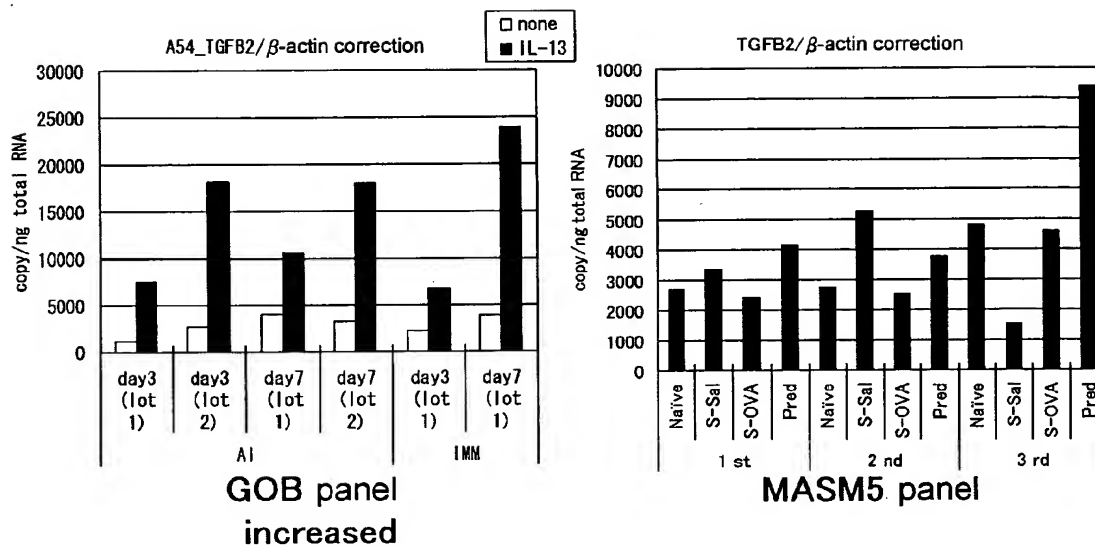


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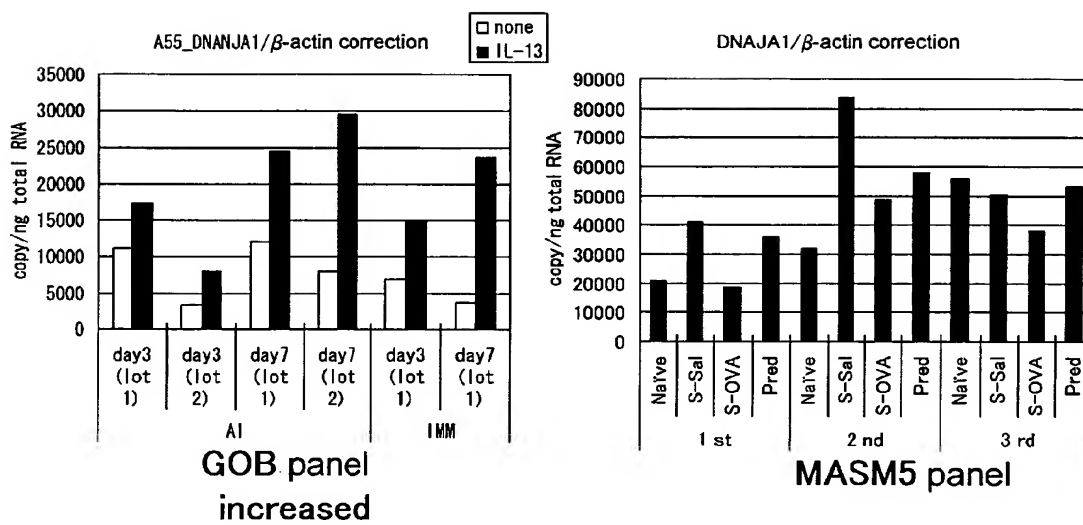


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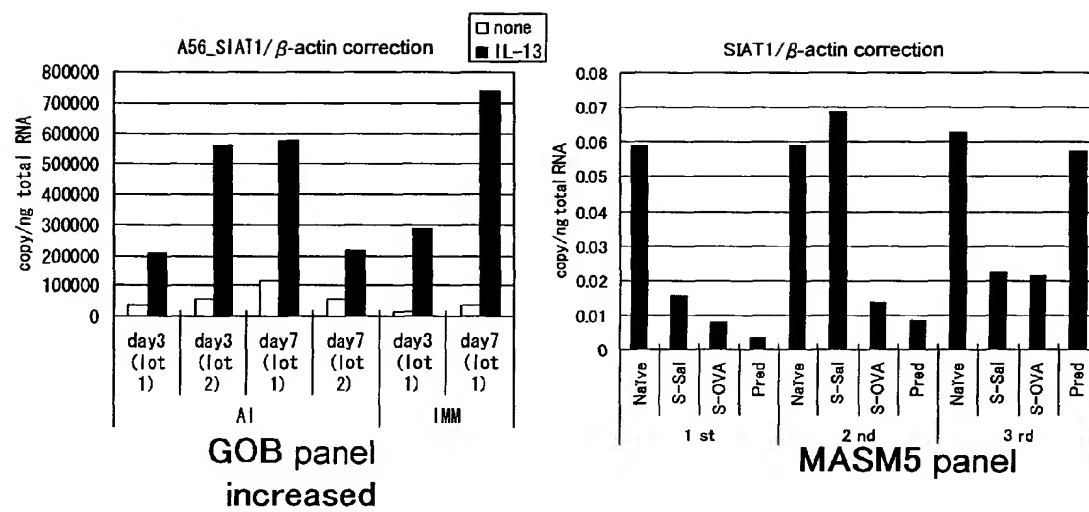


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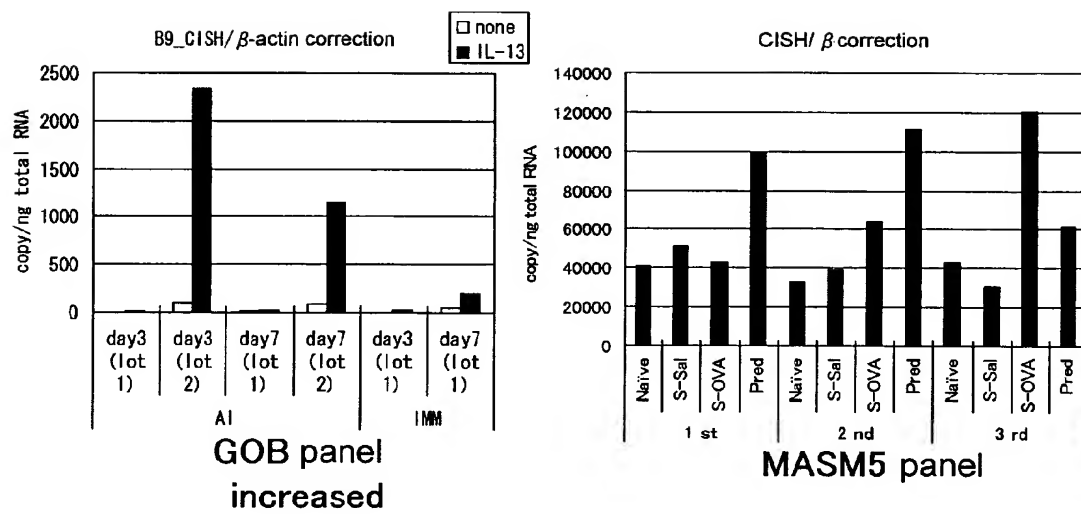


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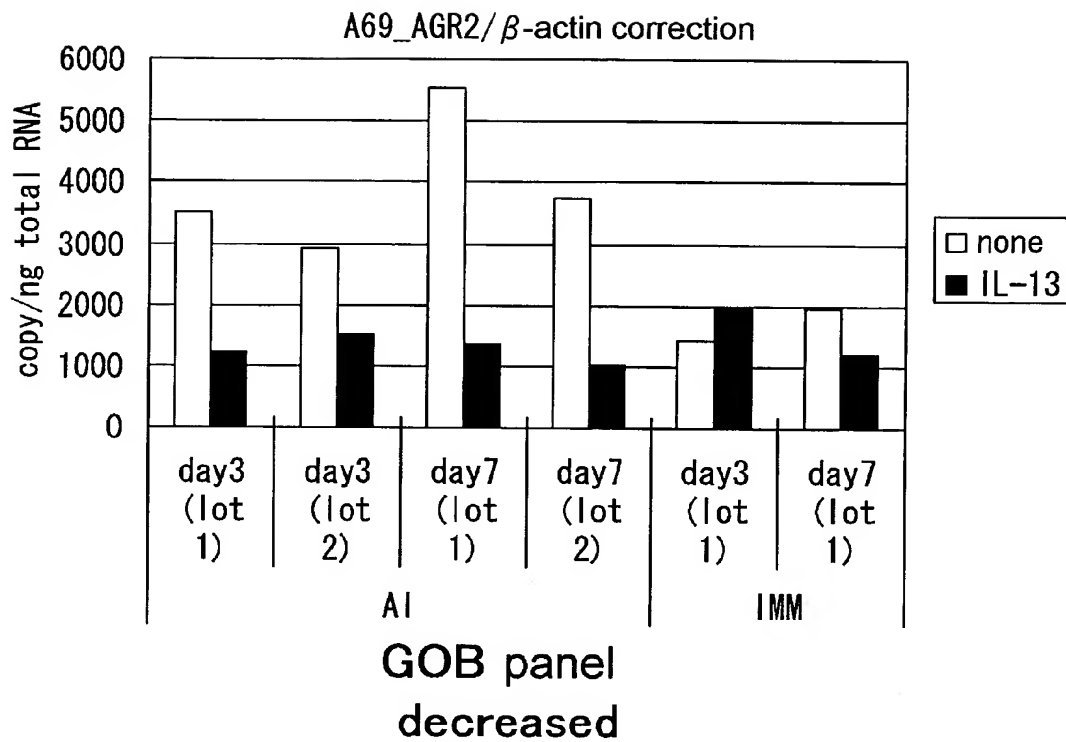


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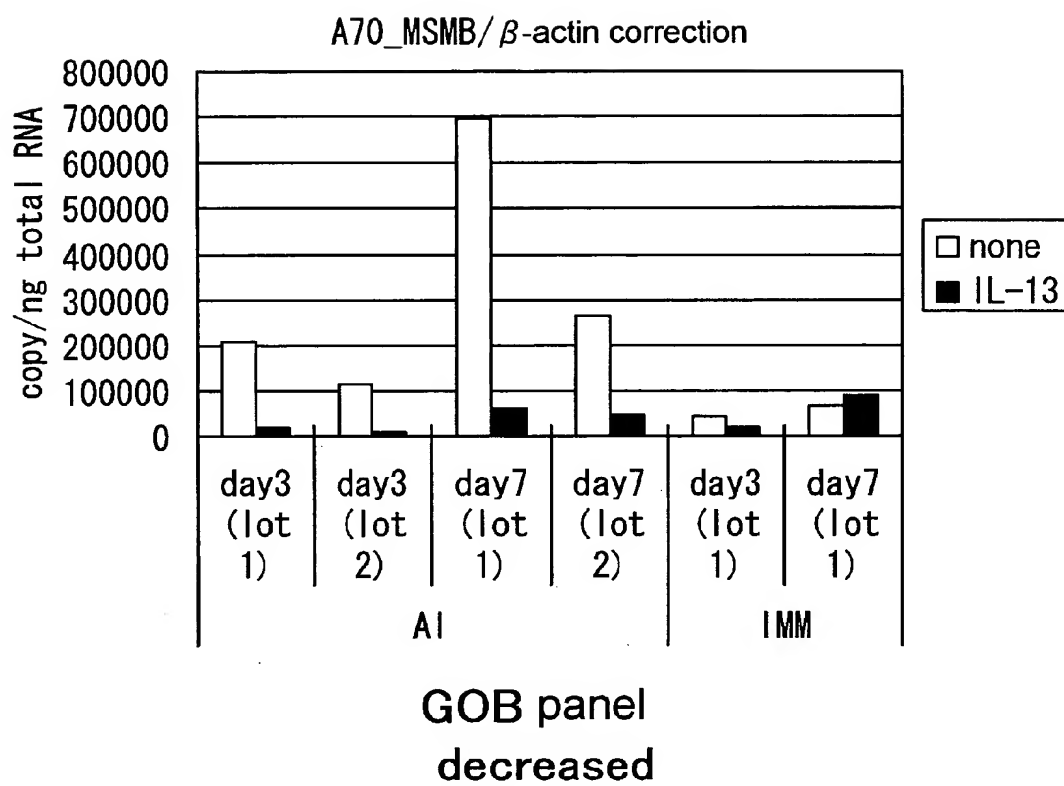




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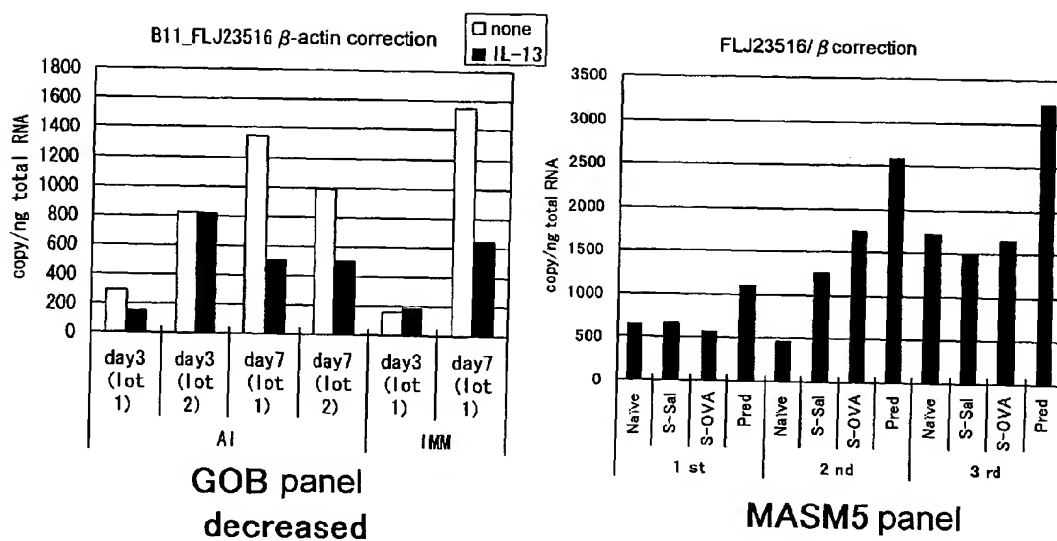


Fig. 50

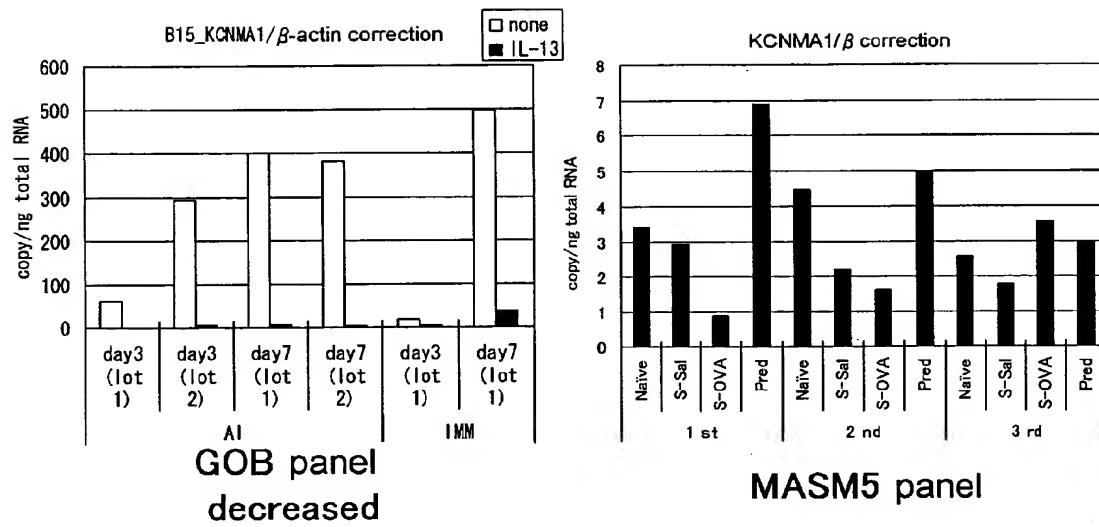


Fig. 51

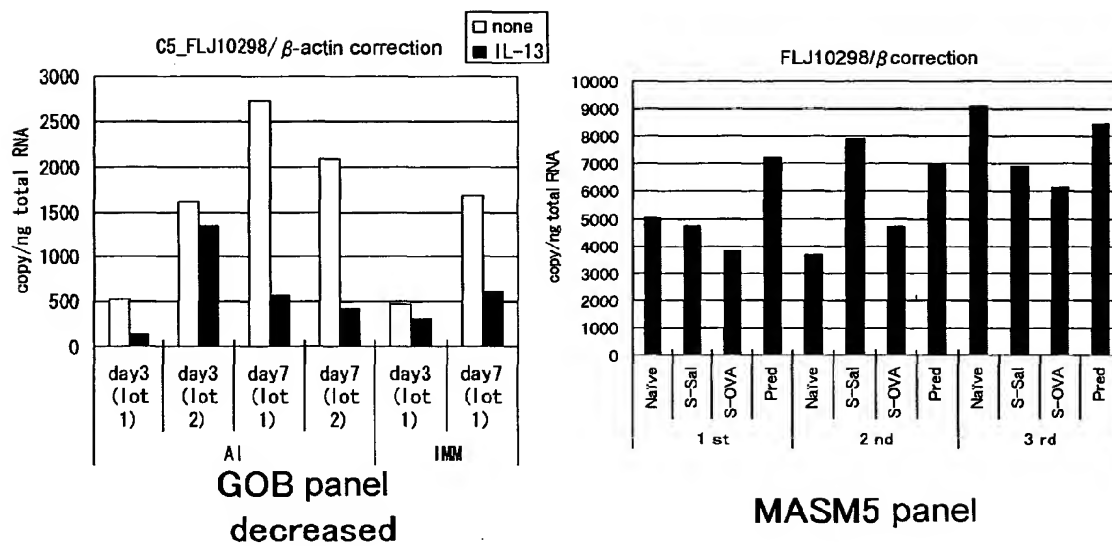


Fig. 52

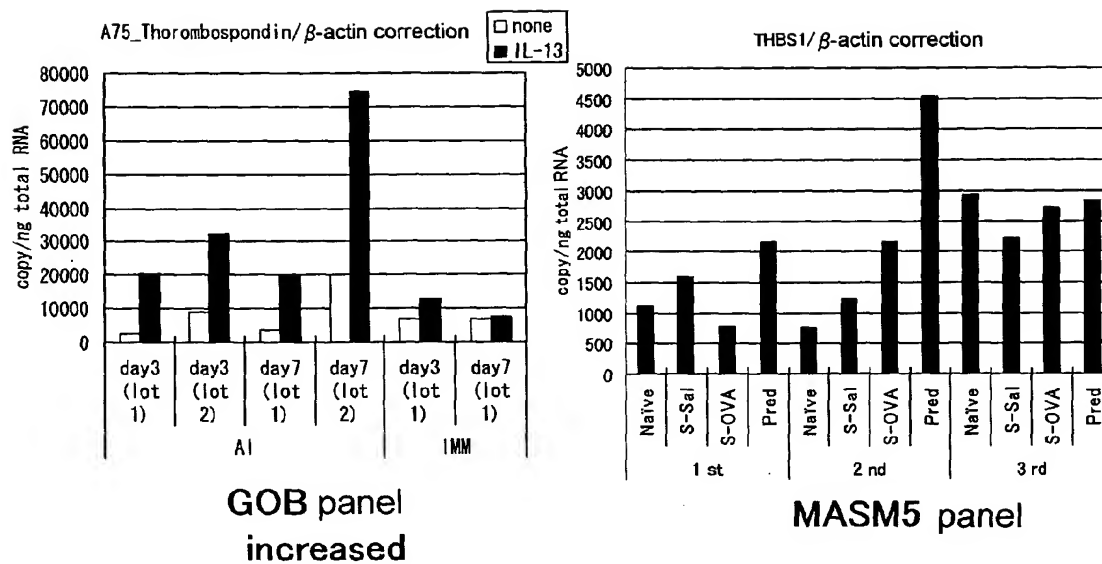


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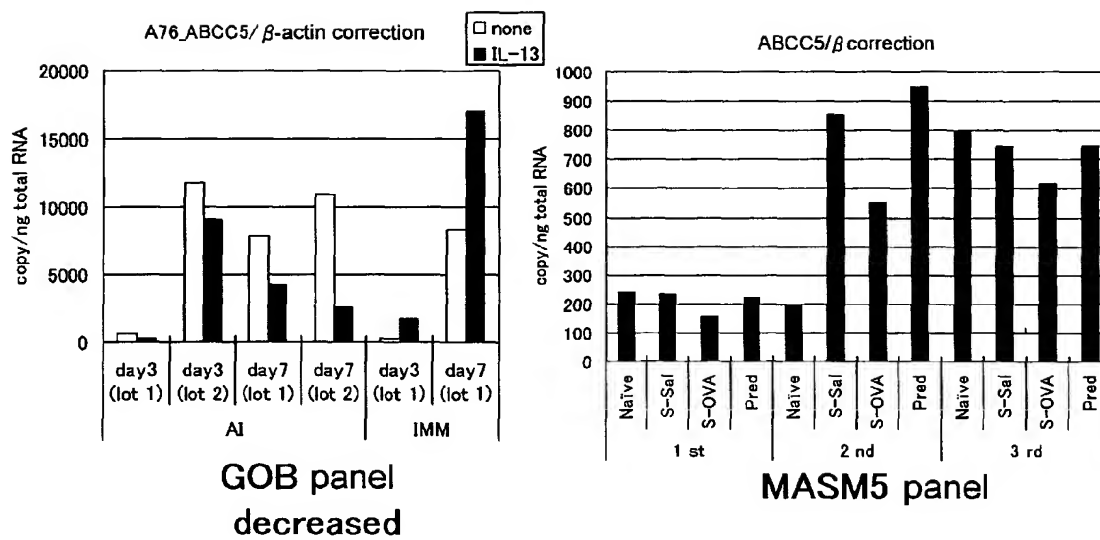


Fig. 54

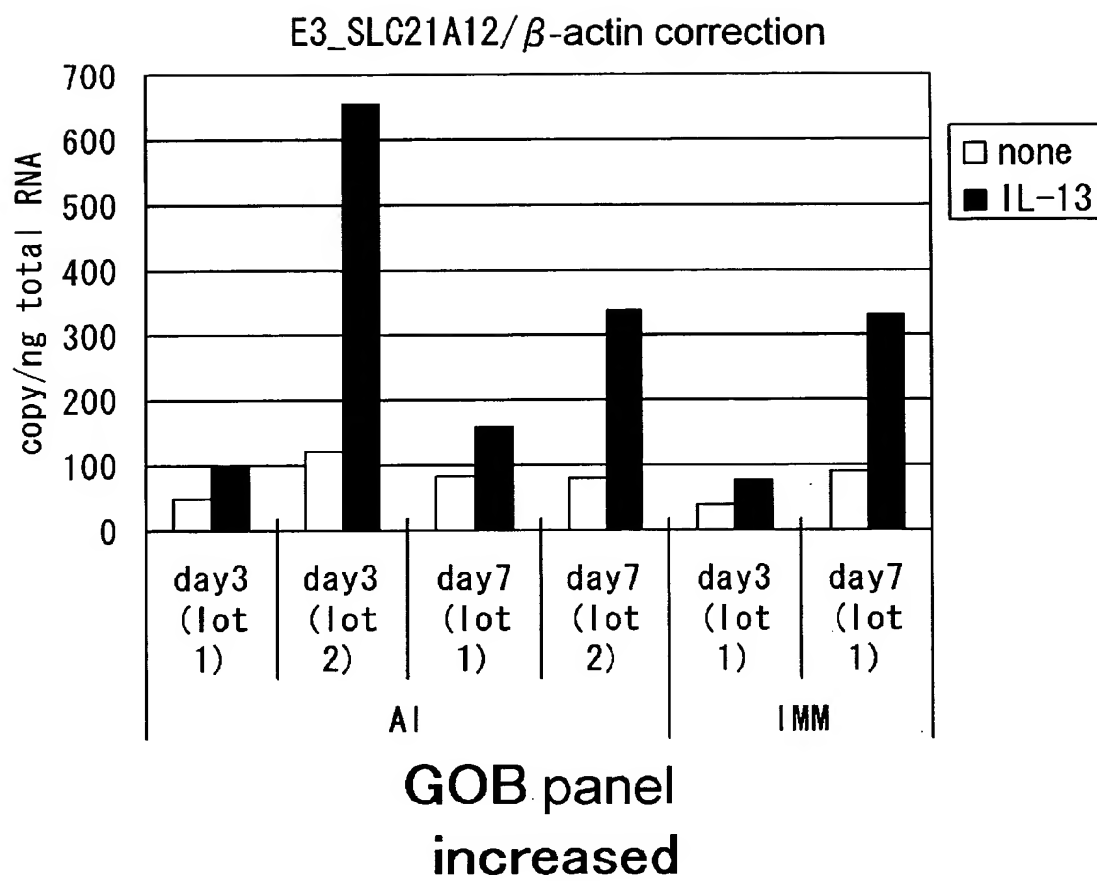


Fig. 55

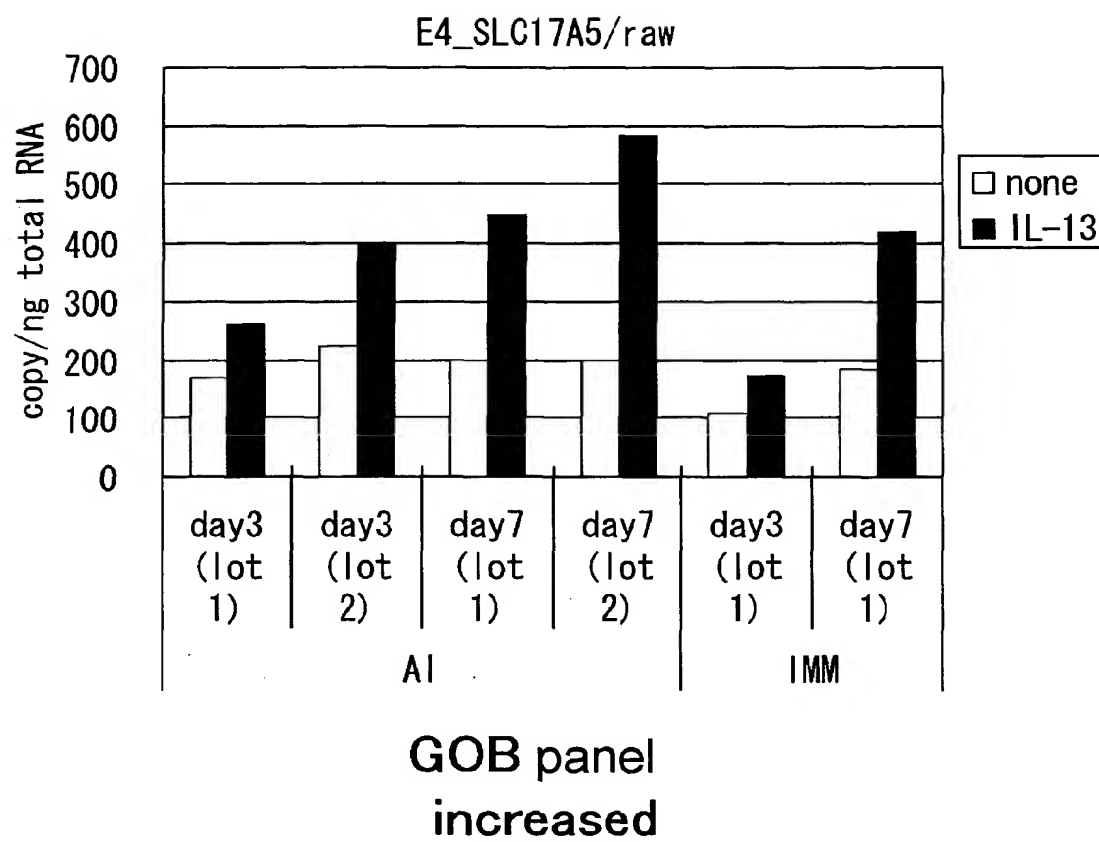


Fig. 56

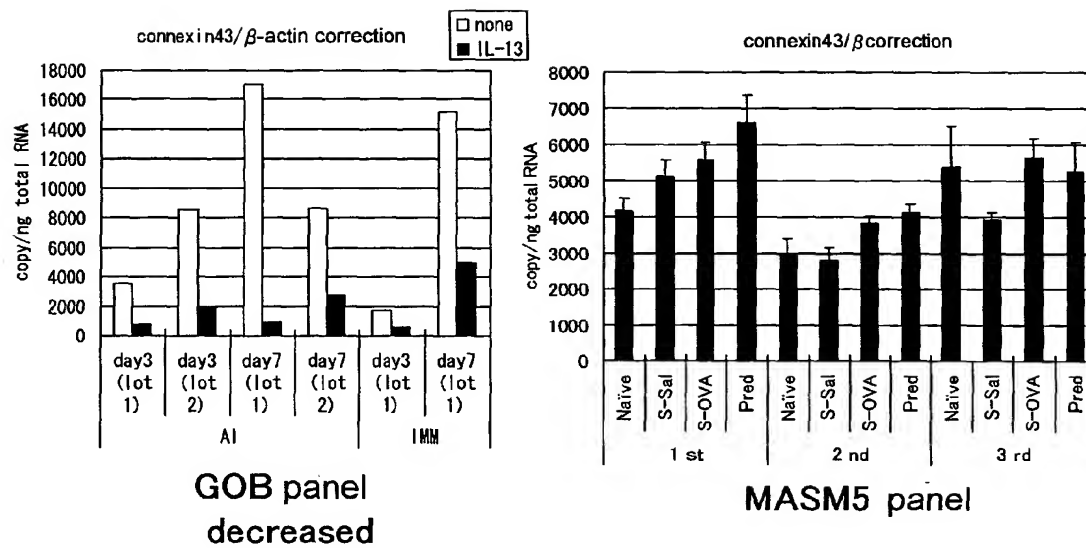




Fig. 57

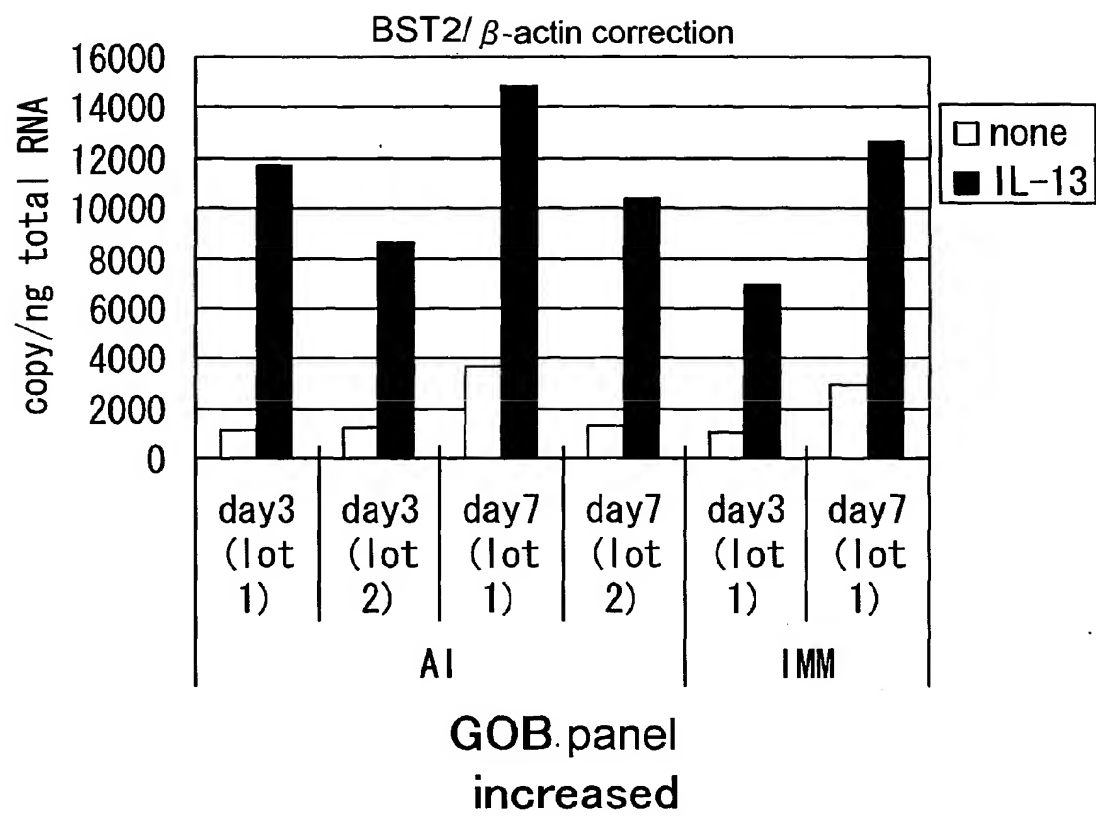


Fig. 58

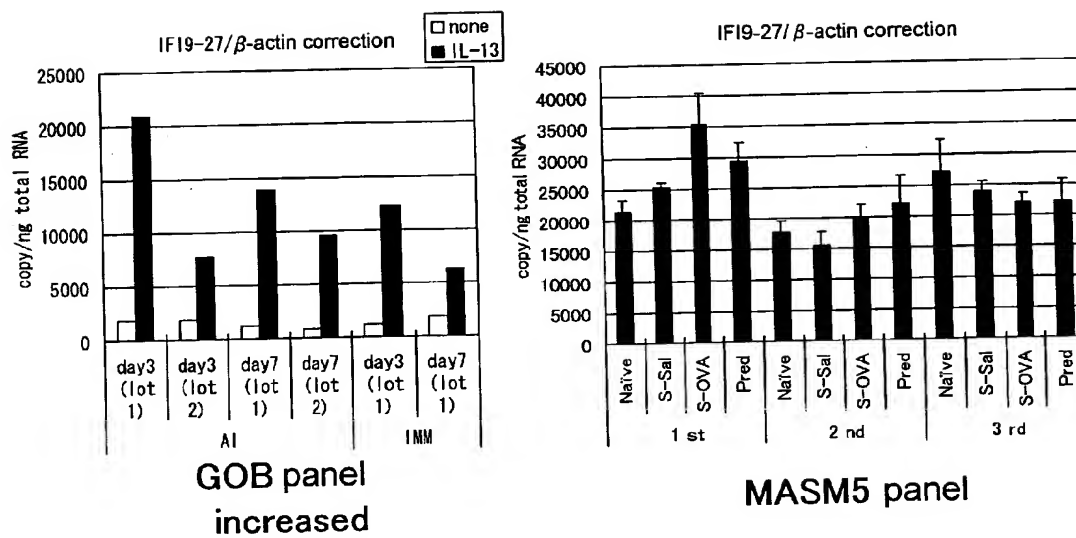


Fig. 59

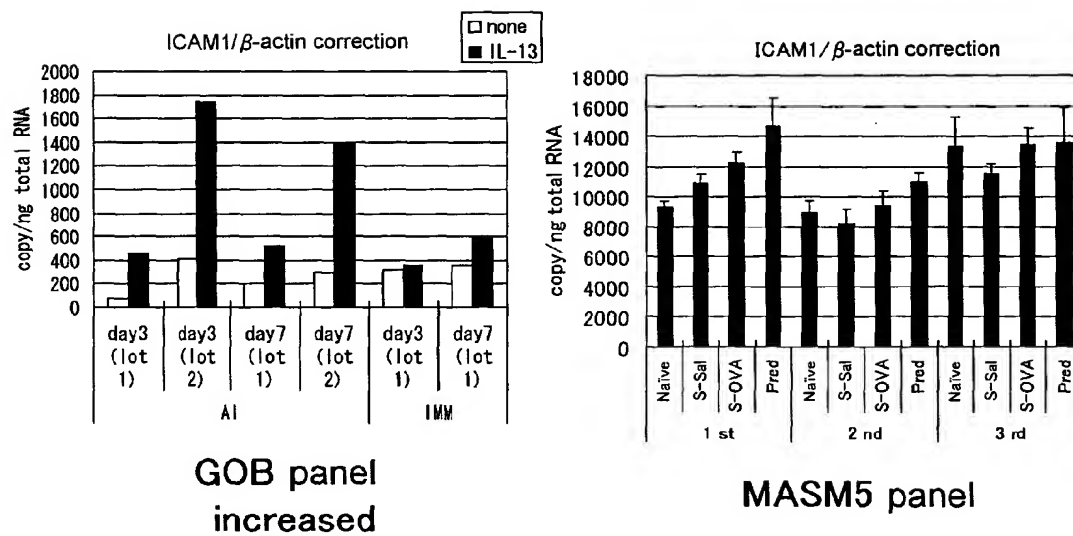


Fig. 60

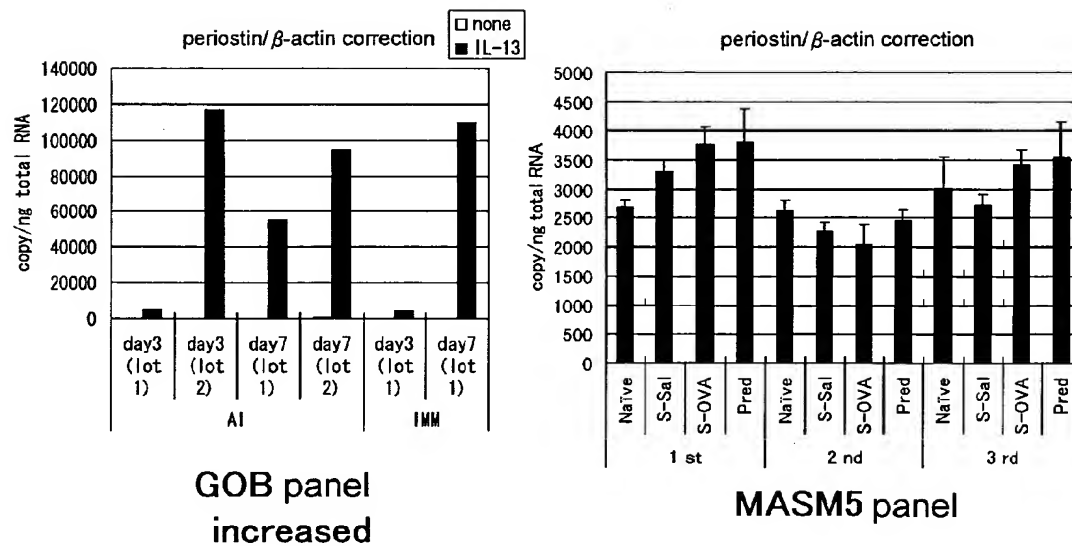


Fig. 61

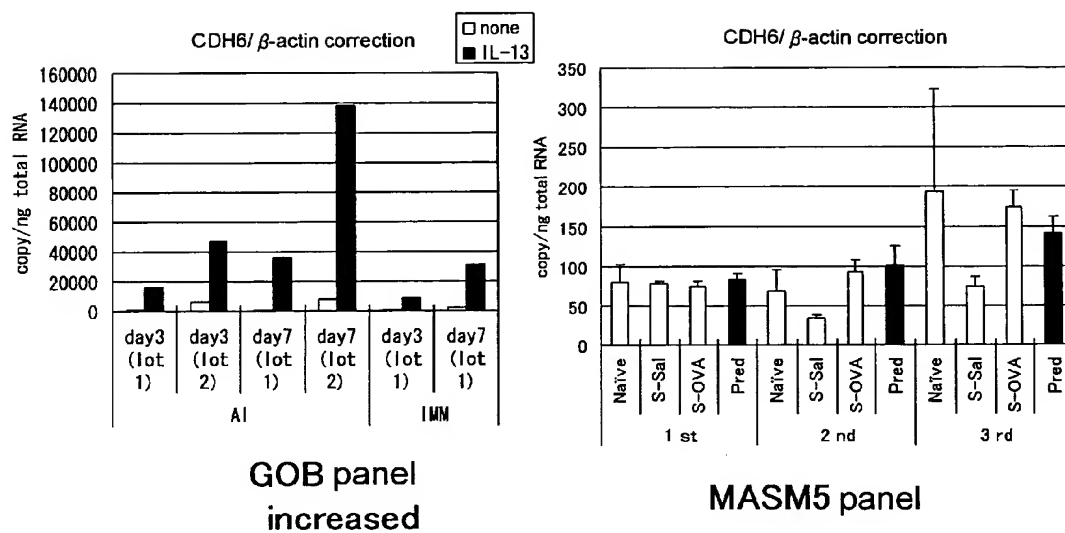


Fig. 62

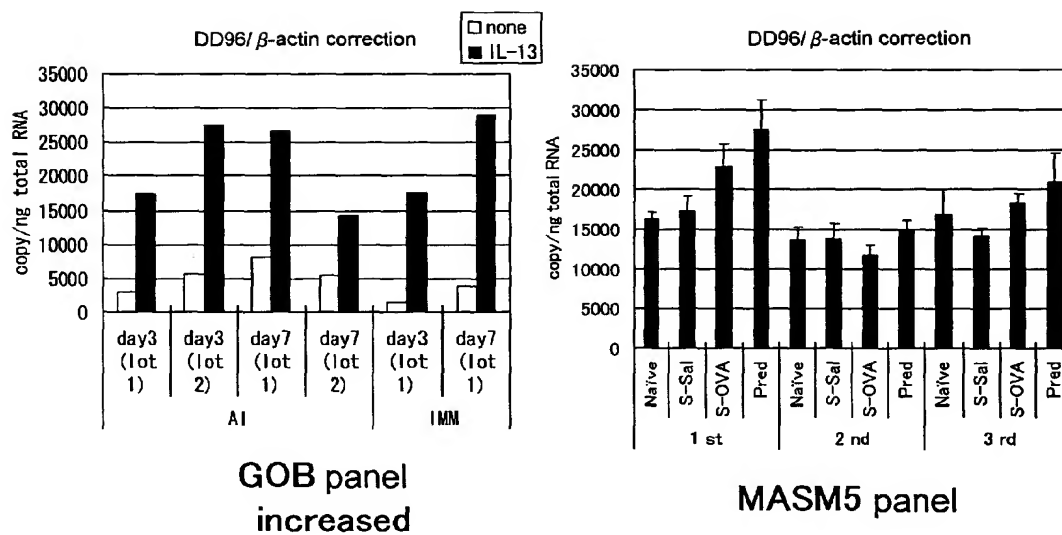


Fig. 63

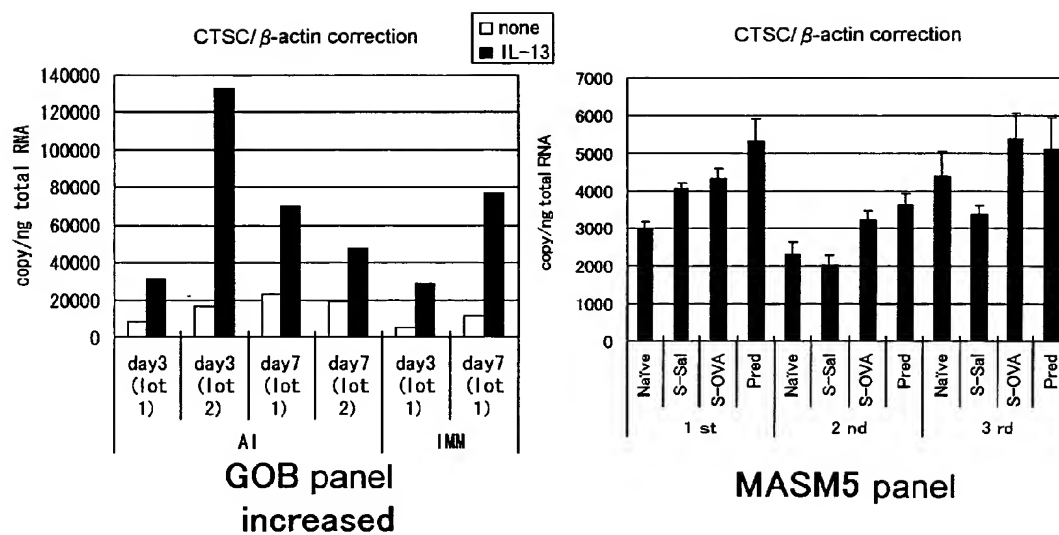


Fig. 64

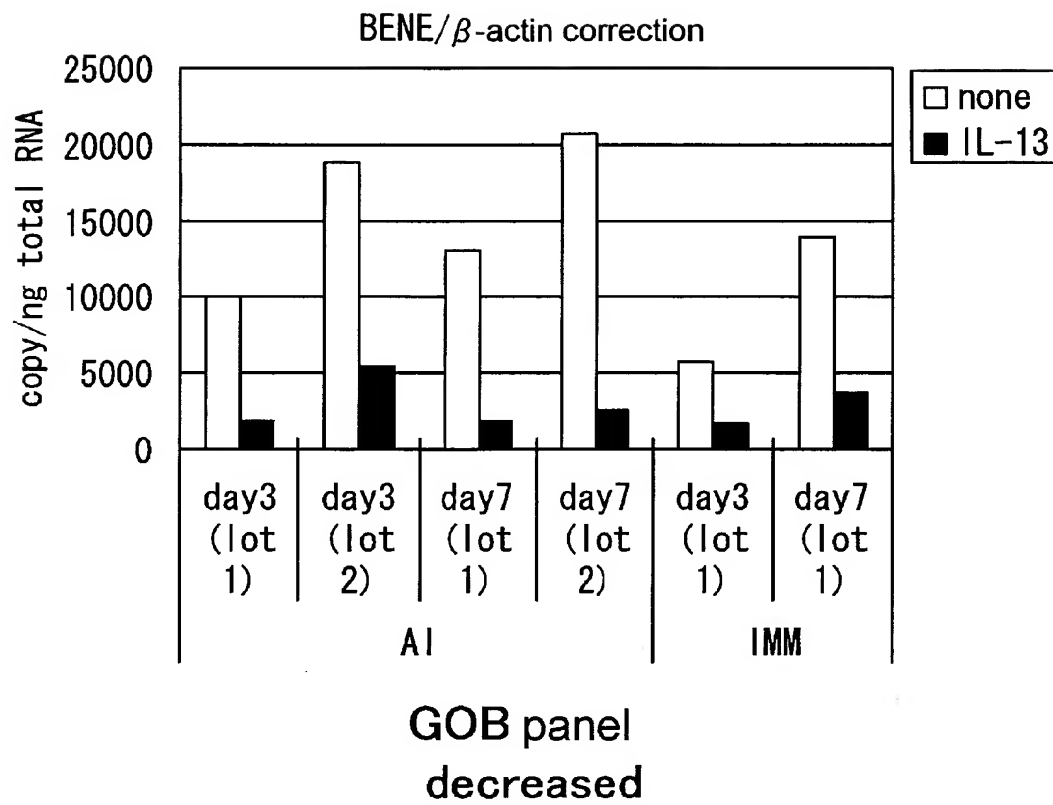




Fig. 65

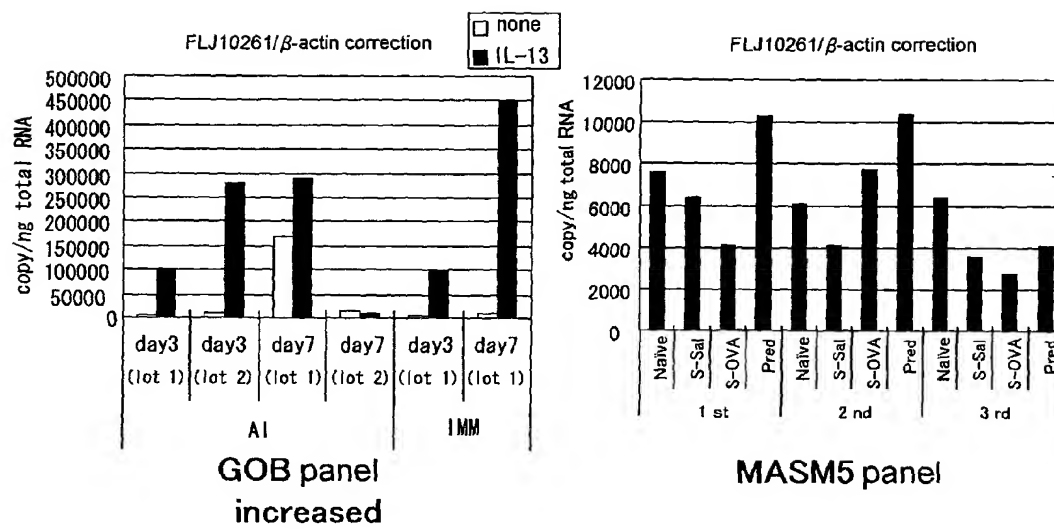


Fig. 66

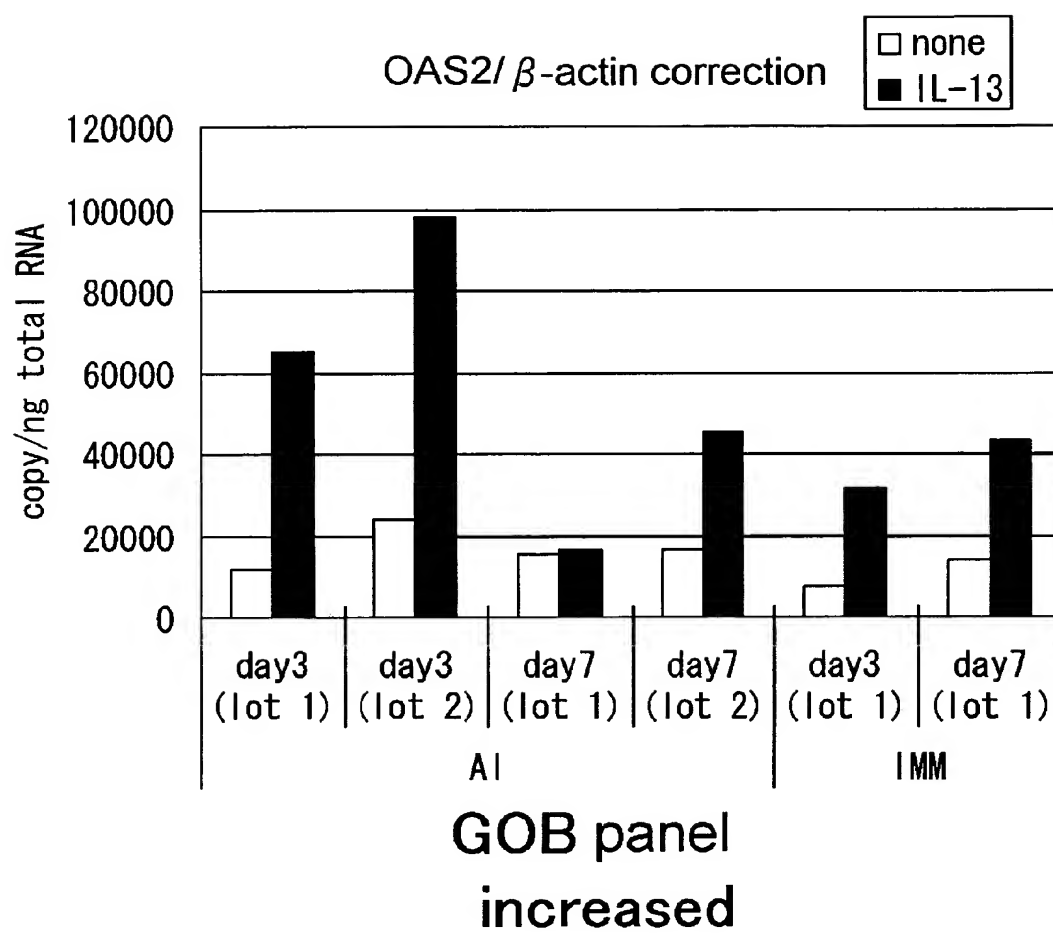


Fig. 67

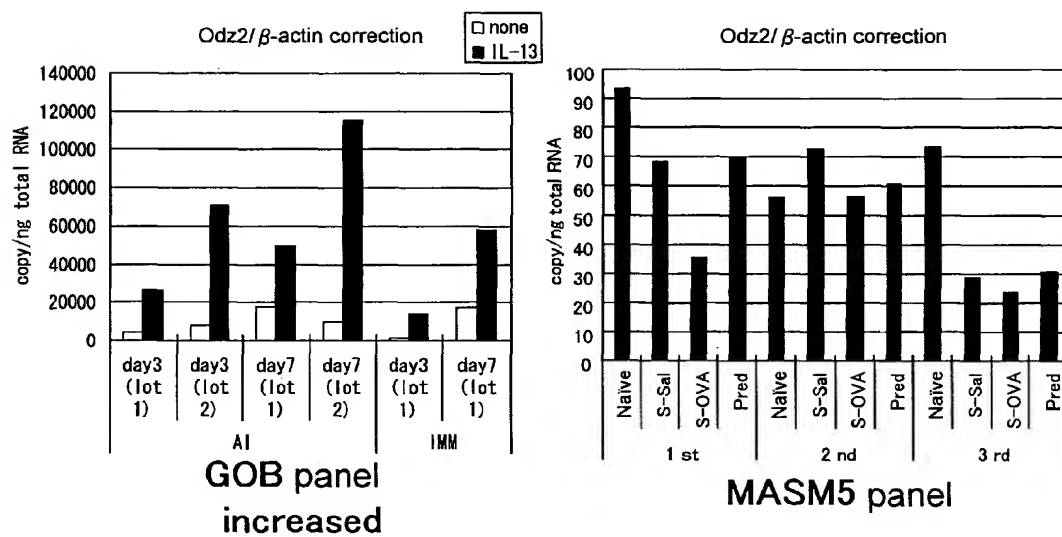


Fig. 68

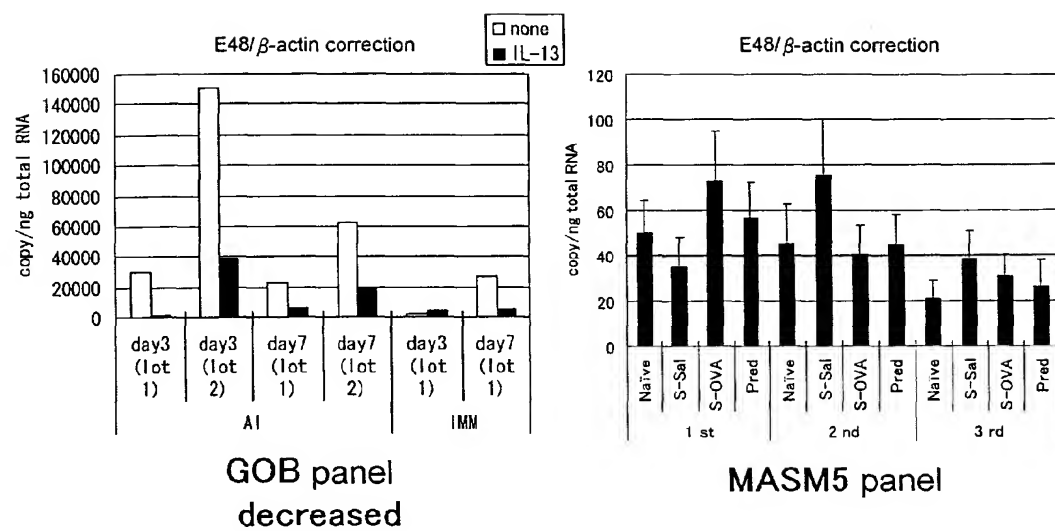


Fig. 69

